



Going global on the Web isn't as straightforward as it sounds. Global Innovators follows page 32.

Not so fast! Making decisions about Gigabit Ethernet can be particularly risky now. See why in Buyer's Guide, page 91.

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Migration costs stall NT drive

► Users mull strategy, keep Windows 3.1 faith

By April Jacobs

DESPITE THE MASSIVE push behind Windows NT, analysts said most large corporations still run Windows 3.1. And analysts are telling those users that it will typically cost nearly twice as much to migrate to NT as it does to move to Windows 95.

There is an added concern here for Microsoft Corp. The company has been pushing 32-bit upgrades of its applications, and a conservative user base could mean flat sales, said Chris Le Tocq, an analyst at San Jose, Calif.-based Dataquest.

Although few users would be surprised to hear that it costs

more to migrate to Windows NT, it is the gulf in costs that stops some short.

MIGRATION AGGRAVATION

Moving from Windows 3.x to Windows NT costs 32% to 47% more than a Windows 95 migration, according to Gartner Group, Inc. in Stamford, Conn. That's because of hardware re-

Migration costs, page 124

IT labor emergency prompts Feds to study, fix shortage

By Julia King

THE IT SHORTAGE has gone from bad to worse, according to numbers released last week by the U.S. Department of Commerce.

But to information systems

managers, it is hard to comprehend things getting any more dire on the hiring front.

"We recently put an ad for applications people in the *Chicago Tribune* and didn't receive one response," said John Zarb, chief information officer at Libbey,

Inc., a \$500 million glassware company in Toledo, Ohio. "I just can't believe it."

"Two years ago, that ad would have netted 80 resumes," Zarb said.

And things are only going to Labor emergency, page 14

BUYING STRATEGIES

IS will risk shaky vendors for right fit

By Craig Stedman

THEY ARE the brave and the few: information systems shops that dare to jump aboard a vendor ship that is taking on water and struggling to stay afloat.

Take Clark Material Handling Co., for example. The Lexington, Ky. maker of forklifts signed on as a new customer with Informix Software, Inc. in June, even though the database vendor had just announced a surprise first-quarter loss so big it shook the company to its financial core.

Clark is betting big on a combination of Informix databases and The Baan Co.'s client/ Shaky vendors, page 14

HOMeworking

► Network pros often chained to their jobs

By Patrick Dryden

NETWORKS HAVE become so vital to corporate America that their caretakers increasingly live at the end of a short leash.

For Cheryl Harris, supervisor of the transmission control center at Sprint Corp. in Westwood, Kan., that meant leaving a hot slot machine to tend to a network emergency.

Harris had \$400 in the tray and \$300 in credits when her ever-present pager summoned her from a casino. "I had to cash out quickly and miss a big jackpot. It's a way of life after 15 years" in networking, she said.

Network managers in For-

tune 1,000 firms know the help desk and automated monitors may call or page at any time, rousing them from bed, disrupting their weekends or yanking them back from personal pursuits to restore the heartbeat of business communications.

And network engineers increasingly use home PCs to check their networks as soon as they wake in the morning. Many network professionals attending this week's Network/Interop '97 conference in Atlanta will be looking for tools that, ironically, will help them do even more remote monitoring via World Wide Web browsers.

Net professionals, page 28

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MIT GOES 'NET SHOPPING

Will buy PCs online in record-breaking \$125M deal. Next page

Generation next

IT user groups seek younger crowd to survive. Page 12

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Users scour show for management solutions. Pages 16 and 17

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NT Workstation beta release hits a few snags. Page 124

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Sheryl Olguin says Harris Corp. needed a bandwidth-management system



By Bob Wallace Soaring demand for World Wide Web access has overwhelmed wide-area network lines at many companies, sending IS managers in search of bandwidth-management systems to restore order.

Bandwidth management, page 16



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and white.



Psychologist Kim Young says the Internet isn't just a medium, it's an addiction. *The Internet*, page 45



Thoughts on closing the IT/business gap from Charles Wang's "Techno Vision II." *In Depth*, page 99



Sandy Relse says a custom GIS app gave her company a new business. *Corporate Strategies*, page 39

MIT engineers biggest E-commerce deal

► Will buy all computers online in \$125M pact

By Mitch Wagner

IN WHAT COULD be a record-setting deal for Internet commerce, MIT has signed an estimated \$125 million, five-year pact to buy all its computers over the 'net from reseller NECX, Inc., the two companies are expected to announce today.

The purchasing system was launched in the campus store for students and faculty just after Labor Day. MIT, in Cambridge, Mass., plans to add internal purchasing early next year, said Tom Mullins, director of administration and finance for information systems at the school.

NECX, which bested a half-dozen vendors to win the contract, makes its profit by marking up the systems. But MIT officials said the school will save money overall compared with buying directly from manufacturers because NECX offers a one-stop shop. MIT also will save money on the cost of paperwork and by allowing its staff to comparison-shop deals among multiple vendors more easily.

BIG SAVINGS

MIT now spends about \$25 million per year on systems purchases. Faculty and staff buy about \$13 million worth of computers per year.

"We expect the savings to be considerable," Mullins said, noting that savings also will come from eliminating purchase orders and on-campus inventory. "We're still trying to get our arms around how significant the savings will be."

World Wide Web-based purchasing is less expensive than paperwork, said analyst Bruce Gupitll at Gartner Group, Inc. in Stamford, Conn. "The average purchase order, for anything from a pencil to a truck, comes to \$125 to \$150 in total cost just to go through the steps of the process." The cost of doing business on the Internet is one-tenth of that, he said.

MIT faculty and staff will have Internet access to NECX servers in Peabody, Mass., where they will be able to order computers for internal MIT use. The school's IS department is building electronic data interchange links from NECX's sys-

tem to MIT's SAP AG business back-office systems.

Employees will fill out a form online requesting the systems they want to buy, and the NECX system will check with MIT's SAP system to make sure the employee is entitled to buy the equipment. If approved, billing, payment and record keeping will be handled elec-

Possible benefits to MIT from online procurement of computer systems

■ Reduced costs of paperwork

■ On-campus inventory of computer systems wouldn't need maintenance

■ Pass-along savings to customers of MIT's campus store

tronically.

As a result of the deal, MIT is shrinking its 5,500-sq.-ft. campus storefront and warehouse to a smaller unit that can accommodate a smaller sales staff and a showroom of about a dozen systems. The MIT store now sells products at a 10% to 12% markup to cover the costs of running the store. Mullins hopes to halve that with the NECX deal.

BUSINESS-TO-BUSINESS

The agreement between MIT and NECX is part of a growing trend of business-to-business procurement. Both Boise Cascade Office Products Co. and Office Depot, Inc. let businesses purchase office supplies over the Internet.

Business-to-business travel booking is offered by several companies, including The Sabre Group and American Express Co., in a joint deal with Microsoft Corp. And General Electric Co. plans to do billions of dollars in procurement over the Internet with multiple suppliers, Gupitll said.

But the MIT/NECX agreement could be the largest ever for Internet commerce between two organizations. □

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U P F R O N T

Caveat surfer

We are frequently visited by vendors with wondrous multimedia tools. They offer eye-popping demos with 16 million-color images and stereo sound.

Their target is invariably the Internet, that big, beautiful global resource about which one news article last week intoned "practically all voice, data and visual communications would flow through" one day. I often return to my desk after these meetings, open my browser, click on a hyperlink and wait.

And wait.

It is exquisite irony. My company has plenty of bandwidth and a T1 link to UUnet, but the sound of tapping fingers is constant in our offices as people wait for Web pages to load. Sound familiar?

Keynote Systems, Inc. in San Mateo, Calif., in conjunction with *Boardwatch* magazine, recently set up 27 computers across the country to download pages from a handful of Web sites every 15 minutes for a month. Keynote concluded that the average throughput of the Internet was about 40K bit/sec.

At the recent Society for Information Management Interchange meeting in Boston, one speaker said that his biggest recent flop was a desktop videoconferencing system that users shunned because it was too darned slow. How many of your friends use Internet telephony?

Silicon Valley venture capitalists are pouring tens of millions of dollars into start-ups that promise to do multimedia on the Internet. Telephone carriers will tell you that you will soon be drowning in bandwidth. Server makers boast of 10,000 transaction/sec. on Intel-based servers. Yet for most of us, the World Wide Wait is very much a reality.

Be cautious of inflated claims about the Internet's promise as a multimedia paradise. And if you're actually using a successful Internet multimedia application, send me a note at the address below.

Paul Gillin, Editor
Internet: paul.gillin@cw.com



For most of us, the World Wide Wait is very much a reality.

THE FIFTH WAVE BY RICH TENNANT



Email Rich Tennant at thewave@tiac.net

Telecommuting gets real

► Management backing key, outsourcing can drive success

By Kim Girard

COMPANIES ARE starting to move beyond fledgling telecommuting pilot programs by formalizing the positions of people who oversee the programs and by seeking help through outsourcing.

Analysts say pilot telecommuting projects often fail without a commitment from the information technology department and the approval of high-level executives. And without a formal companywide plan, employees' telecommuting rights could be pulled at the whim of a new manager or lost when IT decides it can no longer support remote access.

Without a commitment of systems support that enables 8,000 sales and service employees to have full remote access to their desktops, "this project would have failed," said Mike Ruffolo, vice president and chief information officer at NCR Corp. in Dayton, Ohio.

During the past 18 months, NCR has cut operating expenses by between 10% and 45% by eliminating branch offices, paper and desk space, Ruffolo said.

OUTSIDE HELP

While NCR organized its own telecommuting project, other companies are turning to consultants such as start-up Telecommuting Success, Inc. in Englewood, Colo., which helps businesses develop, implement and manage telecommuting programs. The company trains up to 500 telecommuters per month, said David Meade, company president.

So far, Telecommuting Success has worked with J. P. Morgan & Co., which has 600 telecommuters, and Morgan Stanley & Co., which has at least 500 telecommuters, on everything from training managers on how to gauge telecommuter productivity to setting up home offices.

Meade said companies that turn to consultants often are hesitant to assign internal people to a pilot project that might go down in flames when a manager leaves the firm.

"It's a far more complex environment than just having one or two people handling it internally," Meade said. "Companies have said we want to outsource



Merrill Lynch's
Camille Manfredonia:
"I don't think we would have had the same cooperation and commitment that we got inside the firm"

it and weave it back into our management structure."

But Merrill Lynch & Co. has chosen to keep its telecommuting project inside the company, which has 400 telecommuters and a lab where potential candidates can try working away from management before heading home.

Camille Manfredonia, vice president and director of alternative work arrangements, has six staff members assigned to the employee remote access and telecommuting program at the company's private technology group in Somerset, N.J.

"With a consultant or outside vendor, I don't think we would have had the same cooperation and commitment that we got inside the firm," she said.

At Hughes Aircraft Co. in Los Angeles, telecommuting projects have fallen to Carol Gomez. Gomez, a corporate manager who worked on a pilot telecommuting project in 1993 and has drafted informal guidelines, said other units — including a division of 200 employees now setting up a program — now

turn to her for support.

"I am one of the few people with any experience with these projects," Gomez said. Although providing telecommuting advice is now an official part of her job, "it's certainly not a position we'd hire a full-time person for," she said.

At Chevron Corp., Sue Osborn, corporate work and family manager, also is folding telecommuting responsibilities into her job. Osborn said she will draft guidelines that detail telecommuting equipment needs, how to choose who can telecommute and how managers make telecommuting decisions.

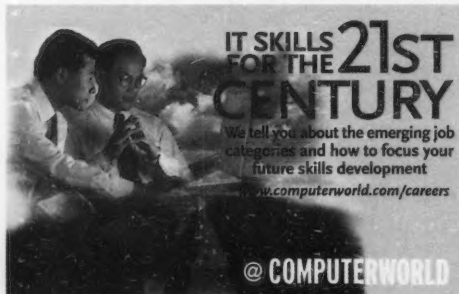
"We're starting to get so many questions about it," she said. "We need more consistency more than anything." □

Success formula

Companies need to do the following to make sure their telecommuting projects succeed:

- Plan from the top down; recruit the support of executive management.
- Draft a formal policy that is broad enough to apply to any department.
- Involve your top IT people from the start.
- Investigate the company's legal responsibility to the telecommuter when the employee is working from home, including workers' compensation issues.
- Train managers and employees about what to expect.
- Stay away from small-scale pilots that run on donated equipment and nickel-and-dime budgets.

— Kim Girard



COPING WITH CRUNCH

Oh, it's a big project, all right!

And as the deadline nears, you just know you're going to be crunched for time. Learn how and what to negotiate with the corporate chiefs who started the project. After all, "you don't have to sign up for a death march," says Ron Caruana (pictured), IT director at GTE Telecommunications Services, Inc.

Managing, page 81



GAO slams U.S. Army's year 2000 preparation

By Sharon Machlis

THE U.S. ARMY'S logistics center faces "critical problems" in grappling with its year 2000 project, raising the specter that the Army won't be able to buy, maintain or transport some needed military equipment after Jan. 1, 2000, unless current efforts improve, according to a congressional watchdog agency.

"As a result, it could be extremely difficult to efficiently and effectively equip and sustain the Army's forces around the world," concluded the General Accounting Office in a study released last month.

SNFU CITY

For example, equipment ordered after Jan. 1, 2000, could be identified as 99-year-old excess inventory and slated for disposal, the GAO said. Equipment maintenance facilities could be temporarily shut for lack of spare parts, and there could be delays in maintaining or replacing weapons systems components, the GAO said.

The Army's logistics center manages more than \$23 billion worth of equipment and supplies each year.

The report is the latest in a string of warnings that some agencies' failure to wrap up year 2000 assessments on time could delay repair and testing past the projects' ironclad deadline. The GAO had earlier

charged that the Defense Department's computer system inventory method was inadequate to determine systemwide year 2000 problems.

Although the Army's Logistics Systems Support Center (LSSC) has taken several important steps to address its year 2000 computer problems, the GAO said, it hasn't adequately dealt with competing workload and staff priorities.

MANY ISSUES

Other problem areas cited include scheduling test data, developing test plans, dealing with outside partners to ensure data can be properly exchanged and devising a contingency plan if the center's computer systems aren't fully functional by January 2000.

"We believe LSSC will find it increasingly difficult to prepare [its Commodity Command Standard System] in time," the GAO concluded.

The Defense Department didn't comment on whether the Army's year 2000 project is at risk. But it agreed with GAO recommendations and has already begun implementing most of them, including drawing up a contingency plan, the agency said. The Army has already canceled or postponed other systems work, such as reducing the number of new software releases, to focus on the year 2000 work. □

Domino targets mainframes

► 10,000 mail users can be served from one S/390

By Barb Cole-Gomolski

HOPING to cash in on the need for more scalable electronic mail, IBM and its Lotus Development Corp. subsidiary last week shipped a version of the Domino messaging server for IBM's S/390.

Though few expect companies to purchase a new mainframe just to run Domino, the software could appeal to owners of S/390 hardware who are looking for a messaging system to support thousands of users.

"This product won't sell S/390s, but it could be compelling for anybody who has one and is thinking about Domino," said Steve Haggerty, a consultant in the Los Angeles office of Ernst & Young LLP.

IBM officials said sites could run as many as 10,000 messaging users, making it an ideal

backbone E-mail server for a big company. A PC server typically handles fewer than 500 mail users per server.

Reducing the number of servers could cut administrative overhead. IBM officials said Domino for the S/390 would also be able to leverage S/390 systems management functions, further reducing management costs.

IBM is charging \$16,250 for the mainframe software and one year of maintenance. Users called this a bargain because a single-processor version of Domino costs \$1,495.

Bill Shelley, vice president of transaction processing services at Banc One Financial Card Services in Columbus, Ohio, a large Domino user, called the development a good idea. "When you think about managing groupware on an enterprise level, this

RELATED LINKS

For these and other related links, point your browser at www.computerworld.com/links/971006dominolinks.html

► Lotus white papers on Domino and other topics <http://www3.lotus.com/worktheweb/content.nsf/61a518eb6fb296d8525630f004e7a0c?OpenView>

► Domino Home <http://domino.lotus.com/>

► Domino knowledge base www.binarystree.com/misc/dominokb.nsf/catNav

is certainly worth looking at," he said.

"The more scalability you have, the better," agreed Gary Rowe, principal at the Atlanta office of Rapport Communication, a consulting and market research company. He said because of application downsizing, "a lot of companies have mainframes with available CPU cycles on them." □

◉ User group melds Java, Madman to manage mail. Page 53

Domino on the mainframe

PRO

- Extremely scalable
- Sites that use S/390 systems management features can balance Domino workload

CON

- Third-party products for Domino may not run on S/390 platform
- Lack of mainframe-savvy Domino developers

Win CE 2.0 makes handhelds viable for IS

By Kim Girard

INFORMATION SYSTEMS managers say Version 2.0 of Microsoft Corp.'s Windows CE operating system will make it easier to develop corporate-strength applications for handheld devices.

"I think [Windows CE 2.0] will be a turning point for IT shops that want to build applications for running their businesses," said Gerry Purdy, president of Mobile Insights, Inc., a consultancy in Mountain View, Calif.

To aid that effort, the operating system, which was announced last week, will be equipped with a C++, Java and Visual Basic tool kit. It also now supports Ethernet, so end users with handheld devices can connect to corporate LANs in real time.

The upgrade also supports Pocket PowerPoint for presentations, the ability to print from a

handheld and larger color screen displays.

"We're going to take another look at it," said Joseph Awe, director of information technology services at PECO Energy Co.

Enhancements to Windows CE 2.0

- Ethernet support
- Pocket PowerPoint
- Support for 32-bit color displays
- Win CE E-mail client, Pmail, will support attached files
- The Internet Explorer 4.0 browser will support writing in native HTML

in Philadelphia.

Awe, who said he found CE 1.0 lacking, would like to equip company managers with CE 2.0 handhelds running World Wide Web-based applets for inventory, inspections and reading meters.

The addition of Java makes CE 2.0 much more useful for Web-based application development, Awe said.

And wireless Ethernet capability will let physicians roam the hospital with a handheld, without needing to synchronize data between the device and a PC, said Tom Giannulli, CEO of Physix, Inc. in Houston.

Physix, which makes patient care information systems, supplies its CE-compatible handheld applications to Massachusetts General Hospital in Boston. □

◉ Card-size device hits the PDA market. Page 71

WorldCom bid surprises MCI

► Acquisition could lead to better deals for users

By Matt Hamblen

IF LAST week's audacious \$30 billion stock bid by WorldCom, Inc. to buy MCI Communications Corp. succeeds, it could help usher in better deals for corporate customers seeking Internet bandwidth and telecommunications services, analysts and users said.

The bid clearly would help long-distance provider MCI, based in Washington, gain access to WorldCom's "local loops," the coveted last network links to end users' offices.

It would also give Jackson, Miss.-based WorldCom control of most domestic Internet traffic, some observers said. Less than a month ago, WorldCom grabbed bandwidth from CompuServe Corp. and America Online, Inc. in a three-way deal.

Some fear that control of all that bandwidth could position WorldCom to raise the cost of Internet access. For example, earlier this year, WorldCom be-

gan charging small Internet access providers for hooking up to its network. That is something that company network managers should follow closely to make sure their companies aren't charged more, analysts said.

But several users and analysts said they doubted that overall pricing will go up, given the many large players in the bandwidth game.

PRICE CONCERNS

"I don't think enterprises should worry that pricing will go up, since there are plenty of [Internet service providers] out there," said Matthew O'Brien, past president of the Communications Managers Association. "But there's still a question whether WorldCom will push their weight around."

"There is always the potential for higher costs, but as competitive as the market is, prices in all sectors have come down," said Bill Dyer, director of information systems at CinCom Sys-

ONE-YEAR OUTLOOK FOR TELECOMMUNICATIONS PROVIDERS			
	Local loop	Internet	Long distance
 WorldCom	Will become strongest of the long-distance carriers in local-loop market	Will be the biggest bandwidth provider if it buys MCI	Fourth in market; second if MCI deal goes through
 AT&T	Will become a player with business users	Residential base will grow	No. 1 in the market
 Sprint	Best prospect for improvement if WorldCom deal goes through	Without WorldCom, it will remain strong	Second in the market without WorldCom deal
 MCI	Partnership with SunTel will help its growth	Will offer more managed Internet services	Third in the market
 Ameritech	Will sell second phone line to PC users	Will expand services for residential users and some businesses	Success will depend on regulations
 Bell Atlantic	Will sell second phone line to residences and businesses	Will expand services for residential users and some businesses	Success will depend on regulations
 BellSouth	New homes will build customer base	Will expand services for residential users and some businesses	Success will depend on regulations
 SBC	Will sell second phone line to former customers	Will expand services for residential users and some businesses	Success will depend on regulations
 USWest	Will benefit from growth outside of the Western region because of cable partnerships	Will expand services for residential users and some businesses	Success will depend on regulations
 GTE	Will benefit from court battles with long-distance carriers	Strong potential growth because of BBN communications purchase	Success will depend on regulations

tems, Inc. in Cincinnati. "I would hope this kind of deal shows there is more competition and means we can get better volume discounts."

Dyer said his company could benefit tremendously by the deal, because CinCom already receives frame-relay services from MCI and WorldCom and uses WorldCom for domestic long-distance service.

INTEGRATED VENDORS

"Now it looks like we'll be dealing with one vendor, and that brings us closer to our objective of minimizing the number of vendors we deal with," Dyer said. "And if WorldCom provides the same level of [good] service we've had, we'll be ecstatic."

Dyer, who already has struck service agreements with WorldCom for quality of service, said he is confident those agreements will remain in place.

That is the kind of thinking that makes analysts believe a WorldCom-MCI merger would create a more competitive marketplace, despite its bandwidth dominance.

"The result [of this merger] would be an organization so competitive and so powerful that it would force other telecommunications carriers to

compete more effectively and bring about major competitive changes in the marketplace," said analyst Tom Nolle, president of CIMI Corp. in Voorhees, N.J.

David Bohnett, president of GeoCities in Santa Monica, Calif., said WorldCom's bid shows that major players are willing to invest massive amounts to build the Internet backbone, which helps all users.

MCI directors will have to choose between WorldCom and British Telecommunications PLC. BT recently downgraded its original offer of \$24 billion in stock to about \$18 billion. Even at the lesser price, some analysts said, BT is the better choice in the long run, because it provides more of an entree to rich global markets than WorldCom.

The BT and MCI boards have already approved their merger, and a shareholders' vote on that deal had been expected by the end of the year. MCI officials said the WorldCom offer was a complete surprise.

Because the WorldCom bid offers such value to stockholders, analysts and even MCI insiders said it will be hard for MCI to walk away. Some said MCI might be reluctant because BT's bigger worldwide presence

would help in negotiating deals in many countries.

But WorldCom has its own worldwide presence and has tended to buy up local access facilities in foreign cities rather than form partnerships. Dyer said he was impressed that WorldCom owned so many facilities in the cities abroad where CinCom operates. □

Online reporter Stewart Deck contributed to this article.

FAQs: Wheeling and dealing

Q. What is WorldCom's offer?

A. WorldCom is offering MCI Communications \$41.50 per share in an exchange of its own stock. Total value of the deal is about \$30 billion, but that depends on stock prices for both companies. Last Thursday, MCI stock closed at \$36.60, and WorldCom stock closed at \$37.80.

Q. What happens to the ongoing deal for British Telecommunications to buy MCI?

A. Stockholders of MCI and BT still must approve the deal, valued as low as \$18 billion. BT reduced its original offer, which was estimated at \$24 billion, because MCI reported a bad quarter and incurred unexpected costs entering the local market. Many believe MCI stockholders will favor the better WorldCom deal before voting by year's end on the BT deal.

Q. What are the benefits of the WorldCom deal?

A. WorldCom gets network bandwidth that MCI holds, and MCI gets important pockets of local access. Even BT could gain if it backs out, because it holds a 20% stake in MCI.

Q. What is WorldCom?

A. Based in Jackson, Miss., WorldCom is the fourth-largest long-distance company in the U.S. It gained attention for its purchase last month of CompuServe Corp. in a three-way deal with America Online, Inc. Last year, WorldCom purchased the parent of UUNet Technologies, Inc., a major Internet service provider, which includes Microsoft Corp. among its investors.

Corrections

The charts relating to a survey of user preferences for browsers from Microsoft Corp. and Netscape Communications Corp. [CW, Sept. 29, pages 1 and 2, "Explorer to slip past Navigator"] should have indicated that the survey base included only users who run Microsoft or Netscape, not the 9.2% who use other browsers.

The story "Wireless users outstanding in field" in the Aug. 25 issue incorrectly stated that laptop leasing is included in Wireless Telecom, Inc.'s bundled offering to wireless users.

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Exchange users OK with wait

► NT migration takes priority over upgrade

By Barb Cole-Gomolski
SAN DIEGO

MICROSOFT CORP. appeared to win over the bulk of Exchange users here last week with plans for its next messaging server release, which will offer tighter integration with Windows NT directory and management tools.

In contrast to last year, when many users were critical of the company's messaging efforts, attendees at this year's Micro-

soft Exchange Conference seemed pleased with the product enhancements — even though it means they will need to upgrade both their messaging server and their operating system to take full advantage of the features.

Microsoft officials said the new version, code-named Platinum, will be released in the middle of next year.

It will share Windows NT 5.0's Active Directory, which is

expected to ease large deployments by making it easier to add and move users among servers.

Platinum also will take advantage of the "Zero Administration" feature of Windows NT 5.0, which eliminates client-side upgrades and automates recovery when systems crash.

DUAL UPGRADE NEEDED

Users praised the company's plans despite the dual upgrade requirement and even though the integrated directory is at least eight months away.

"A global directory is a nice technology, but most companies don't have one in place today," said Mark Bennett, information systems manager at Security DBS, a Dallas-based division of Dresser Industries, which makes drill bits for oil rigs.

Several users echoed Bennett's comments, saying they are preoccupied with migration issues and aren't yet ready to tackle the assembly of an enterprise directory.

Patrick Kildea, a senior consultant at Vanstar, a national consulting firm in Iselin, N.J., said the lack of an enterprise di-

Microsoft to get new Outlook

Better Internet hooks and a simplified user interface are on tap for users of Microsoft's Outlook electronic-mail and collaboration client.

Microsoft officials provided a design preview of the upcoming release, dubbed Outlook 98, at last week's Microsoft Exchange Conference.

Expected in the first half of next year, Outlook 98 will support several Internet protocols, including the Internet Message Access Protocol (IMAP) and the Lightweight Directory Access Protocol (LDAP).

IMAP gives users more flexibility in the way they retrieve E-mail, and LDAP lets users easily view and update directory information using a World Wide Web browser. Outlook 98 also will support Hypertext Markup Language E-mail, Microsoft officials said.

The new release also is expected to be faster and easier to set up than previous versions.

Microsoft officials promised a simpler user interface that includes a new search tool. There also will be a tool that helps users create mail folders. — Barb Cole-Gomolski

ADD-ON PRODUCT PARADE

Microsoft last week announced the following add-on products for Exchange:

Company	Product
Eastman Software	Workfolder and Document Manager for Exchange
Trend Micro	ScanMail 1.5 for scanning the contents of Exchange public folders for viruses
The MESA Group	Application Assessment and Planning Server for analyzing Notes applications that are being migrated to Exchange

rectory and good management tools are sticking points for some users, but that won't keep most sites from deploying the software.

"Companies are going ahead and rolling out Exchange because they know that Microsoft is aware of what they need and is aggressively trying to fix it," Kildea said.

That wasn't always the case. Earlier issues — such as the 16G-byte limit on message storage — held up some of the big

sites. But the 16G-byte limit was lifted in Exchange 5.5, a release that is in widespread beta testing now and will ship by year's end.

Some users said Microsoft still has some work to do. Guy O'Brien, a network manager at the U.S. Department of State in Washington, said Exchange is a pretty good mail system, "but doesn't yet offer much beyond that." For instance, the platform is still light on groupware features, he said. □

Microsoft shift may hurt CORBA

By Sharon Gaudin

MICROSOFT CORP.'S recent moves toward cross-platform support could take a little steam out of the swelling momentum building behind CORBA.

Microsoft, known for its proprietary focus, this week will release Component Object Model (COM)-based data access components that will help developers build applications that can more easily access information from a variety of databases — even if they aren't sitting on a Microsoft server (see related story, page 6).

Some users and analysts said that could be a blow to the industry-standard Common Object Request Broker Architecture (CORBA), which has gained much of its market and mind share from easily connecting new applications to the company's legacy databases. Even Bill Hoffman, the new president and chief operating officer at Object Management Group (OMG) in Framingham, Mass., said Microsoft's enhancements

will make CORBA a harder sell.

"I think it most likely will factor into our decision," said Mary Kratz, special project coordinator at the University of Michigan Medical Center in Ann Arbor. Kratz said she is trying to decide whether to pick up CORBA to integrate front-end applications to legacy applications and databases.

"We have all these legacy applications with data locked in them. Every time we need that data, we have to go back to the vendor and ask for an application. That gets expensive fast," Kratz said. "COM didn't give us much functionality to get to the back end. ... I will take another look at COM now."

ABOUT THE STANDARDS

CORBA is an industry-standard architecture that serves as a technical bus that hauls information between applications and databases, connecting them and enabling them to communicate regardless of the platform.

Microsoft's COM is a client-side architecture that connects

Windows-based applications.

David Lazar, lead product manager for Microsoft's visual tools, said the data access components released this week can be used with the tools until they are added directly to the tool packages in the next versions. They were designed to enable applications to access disparate databases.

The components are OLE DB, Active Data Objects (ADO) and Open Database Connectivity (ODBC).

ADO is a high-level programming interface that makes it easier to set up the access channels. ODBC is a lower-level connection technology that can access data on various databases. Although OLE DB does the same thing, it also gives access to nonrelational data sources such as object-oriented databases and mainframe flat files — previously inaccessible through ODBC alone.

"It could be a big blow for CORBA," said Karen Boucher, vice president at The Standish Group International, Inc. in



Concorde Solutions' Isaac Applbaum: COM may be more desirable, but it still doesn't offer enough scalability

Dennis, Mass. "To battle it, the OMG is going to have to come out with an easier way to do database connections with CORBA. ... One thing about wars is that it's good for the customer."

Isaac Applbaum, president and CEO of Concorde Solutions, the information technology subsidiary of Bank of America, said

the enhancements make COM more desirable, but it still doesn't offer enough scalability.

"We're rolling out a CORBA-based application that will support 5,000 concurrent sessions on the Internet and 500 hits a minute. Our thought is that it wouldn't be doable with COM," Applbaum said. □

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FRANKLY SPEAKING

Guess what the IRS wants now?

FRANK HAYES

DID YOU KNOW that the Internal Revenue Service — with all its other troubles — has developed an unnatural interest in your source code?

Yes, that IRS. The IRS that just more than doubled the estimate for its own year 2000 fix from \$500 million to \$1.1 billion, the IRS that butchered two recent systems upgrade attempts, the IRS that couldn't account for \$113 billion in accounts receivable because of fouled-up computer systems in a 1995 audit.

That bunch of IT boneheads now wants to include source code in the documents it examines when it sifts through your company's books during a tax audit. That is part of the "books, papers, records or other data" it can demand for determining the correctness of your company's tax return under Section 7602 of

the Internal Revenue Code.

Why does the IRS now want source code — which virtually none of its auditors will be able to make heads or tails of?

"In order to be able to verify the returns," said an agency spokeswoman.

And it isn't just your home-grown source code the IRS is interested in. It's also demand-



The IRS just wants your source code — and claims it can take it.

ing source code from software vendors.

For example, the IRS is now fighting over source code with Computer Language Research, Inc. (CLR), a Carrollton, Texas-based tax software vendor. CLR isn't being audited, but some of its cus-

tomers are — so the IRS is demanding that CLR turn over its source code as part of those audits.

Not surprisingly, CLR doesn't want to hand over all its trade secrets and technology tricks to the IRS or anyone else. So the vendor is in court in Dallas and Chicago, fighting a fistful of IRS summonses.

Now, understand: The IRS doesn't need that source code to trace the numbers from balance sheet to tax return — the software generates worksheets for that. Nor does the IRS believe the software is buggy, or want specific questions about it answered. The IRS just wants the source code — and claims that under Section 7602, it can take whatever it wants.

And since 1994, when it first started going after tax-preparation software source code, the IRS has expanded its demands. Next, the IRS is expected to demand source code for accounting systems, which are at least as crucial to confirming a tax return's numbers as tax software.

That means if your company is audited, your IS shop may find itself hip-deep in some very unpleasant muck.

What if the dusty mainframe source code for your custom accounting systems

is written in a mix of programming languages, and the IRS doesn't have the expertise to make sense of it?

What if you can't find all the source code for your accounting systems? Or what if the source code doesn't actually match the system you're running?

What if you've moved to some newfangled system like SAP R/3 and that big German vendor refuses to turn over its source code to the American tax agency?

What if your vendor has gone out of business and the source code isn't available? What if that vendor refuses to turn over its source code and your tax audit gets kicked into a corner while the vendor and the IRS slug it out in court?

What can you do? Talk to your company's legal staffers — make sure they know the situation. Talk to your software vendors and nail down agreements for what will happen if the IRS demands their source code. Call your congressman. Find your source code. And do it now, before the IRS shows up on your corporate doorstep with a summons.

Because if you thought 2000 was the number to drive you crazy, just wait till you see what 1040 can do. □

Hayes is Computerworld's West Coast bureau chief. His Internet address is frank_hayes@cw.com.

SHORTS

Microsoft swats Excel bug

Microsoft Corp. is advising Excel 97 users that the spreadsheet may fail to recalculate cells under obscure conditions. A patch should be posted within days. The work-around will force Excel to recalculate all cells by pressing Ctrl-Alt-F9. More information about how to reproduce the error is available at www.microsoft.com/office/.

Court supports spam king

Spam king Sanford Wallace got another chance last week when a U.S. District Court judge ordered an Internet service provider to reconnect his Internet direct-mail business to its network until at least Oct. 16. The judge said Apex Global Internet Services, Inc. (AGIS) in Dearborn, Mich., violated a 30-day termination clause in its contract with Wallace's Cyber Promotions, Inc. when it cut off the company on Sept. 16 without notice. AGIS said it terminated Cyber Promotions because it believed a massive ping attack against the network was a protest against Cyber Promotions.

Netscape betas proxy server

Netscape Communications Corp. this week will ship the beta for Proxy Server 3.5, the latest version of its software for caching and filtering World Wide Web content. The new version includes support for Lightweight Directory Access Protocol 3.0 and a security feature that lets it sit outside the firewall and point traffic to the Web server inside the firewall. The final version of Proxy Server 3.5 is due by year's end. It will cost \$525.

McAfee blocks hostile applets

McAfee Associates, Inc. in Santa Clara, Calif., this week will announce a server protection product aimed at

blocking hostile Java and ActiveX code from coming in from an Internet connection. WebShieldX also can scan outgoing electronic mail for credit-card numbers and key phrases such as "company confidential." The software, which will ship sometime this quarter, will check for a list of known malicious applets. It can be set to block E-mail that contains any phrases in a subject line or message body. Pricing wasn't available.

Mitsubishi ships mini-notebook

Toshiba has a competitor to its ultralight Libretto. Mitsubishi Corp. in Japan will introduce the 2.4-lb. Amity CN mini-notebook by month's end, but it is available now for \$1,999. The Amity CN is a Windows 95-based machine with a 133-MHz Pentium processor, 16M bytes of memory, a 1.2G-byte drive and a 7.5-in. color display. The Libretto, which weighs 1.85 lb. and costs about \$2,000, has a 75-MHz processor and a 6.1-in. display.

NC gets office suite

Network Computer, Inc., an Oracle Corp. subsidiary that makes server software for network computers, has announced it will bundle a suite of office productivity applications from Star Division GmbH in Hamburg, Germany. The StarOffice 4.0 suite includes Web-enabled word processing, spreadsheet, presentation graphics, E-mail, news, charting and graphics applications.

Zona gives Explorer the edge

Zona Research, Inc., has released a browser census indicating that Microsoft Corp.'s Internet Explorer commands a 36% market share — up from 3% 18 months ago. Netscape Communications Corp.'s Navigator is still the leader with 62% market share, according to the poll of 279 enterprises. But according to Zona research,

many enterprise users switched to Internet Explorer because it is embedded in Windows 95 and because of Microsoft's aggressive action on the partnership front.

PointCast ships update

"Push" news and information vendor PointCast, Inc. today plans to announce that Version 2.0 of its desktop client can be downloaded free from www.pointcast.com. The new version is a 32-bit application for faster throughput. It will let companies build custom channels that can be viewed by employees or business partners. Other design changes cut bandwidth use by 55%.

Data warehouse tool ships

MicroStrategy, Inc. in Vienna, Va., this week plans to announce a promised upgrade of its DSS Server analysis software that lets users pull subsets of information out of data warehouses. The slices could be set up as departmental data marts or downloaded to end users who want to do analysis while disconnected from the MicroStrategy server. DSS Server 5.0 is due to ship this month on Windows NT 4.0 servers. Pricing will start at \$37,500 for 20 users.

SHORT TAKES: Intel Corp., in Santa Clara, Calif., has agreed to acquire Corollary, Inc., in Irvine, Calif., which makes high-performance eight-processor servers using Intel chips. ... Hummingbird Communications Ltd. has introduced Common Ground Internet Edition, a tool for converting any Windows document into a Java program that can be viewed using a Web browser. It is available free at www.hummingbird.com/cg/cgie. ... Informix Software, Inc. in Menlo Park, Calif., announced plans to bundle object-request broker software for Java and C++ from Visigenic Software, Inc. in San Mateo, Calif., with its database management tools.

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Internet provider fights off attack

By Stewart Deck

A USUALLY quiet communications server at Clark Internet Services suddenly got very active two weeks ago.

It was the beginning of an attack that

eventually led to an embarrassing breach of security for an online mailing list of security specialists who use the Internet service provider.

Over the next week, Columbia, Md.-based Clark Internet danced a disquiet-

ing tango with a shadowy figure hacking in to its network.

Detecting the first phase of the hack was just the "dumb luck" of hearing the quiet server spring to life, said Jeremy Hartman, director of systems and net-

works at Clark Internet.

A quick glance at the service provider's LAN traffic records showed that a hacker had broken in to the network through a fast string of attacks on other servers.

"At that point, we changed the filtering on our firewall so that *nothing* could get through," Hartman said.

But then the service provider realized it needed to reopen the network — carefully monitored — so it could collect evidence. "You shouldn't go to the law authorities without ... enough detailed information," said John Cilio, president of The Intranet Institute, an industry advisory group in Bethesda, Md. The institute became involved in the case as a customer of Clark Internet.

A quick response to a hack is crucial to discovering the culprits. "Make sure you have procedures in place about who is contacted, who is in charge, who the security contacts are and what data needs to be recovered immediately."

— Michele Crabb, Cisco

Five days later, the hacker slipped in to Hartman's personal PC files. Then last Monday, the hacker broke in to The Intranet Institute's security newsletter mailing list and mailed out a nose-thumbing pornographic bulletin to thousands of subscribers.

On his way out of the system, the hacker corrupted the entire log filing system, covering his tracks.

"I can't be 100% sure how they got in," Hartman said. "They were able to access a [backup] machine on one of our networks somewhere and sniff some passwords out. We still don't know exactly what machines were compromised."

A quick response to a hack is crucial to discovering the culprits, said Michele Crabb, a network security specialist at Cisco Systems, Inc. in San Jose, Calif. Crabb works closely with law enforcement officials.

"Make sure you have procedures in place about who is contacted, who is in charge, who the security contacts are and what data needs to be recovered immediately," Crabb advised. "Less than 50% of the network people we talk to have such procedures in place."

Hartman did have a plan and quickly contacted the Computer Emergency Response Team (www.cert.org), followed by the FBI (because pornography was involved) and other authorities.

The Intranet Institute sent electronic mail to its subscriber list, explaining that its list had been hacked and that authorities were investigating.

As of press time, no charges had been filed in the Clark Internet incident. □

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USER GROUP UPDATE

SIM tries new tactics to add members

By Thomas Hoffman
BOSTON

FACING FLAT-TO-DECLINING membership, the Society for Information Management (SIM) International is betting on a youth movement and new programs to keep it from collapsing like other trade associations have in the past year.

Several factors have contributed to SIM's problems. Corporate mergers and acquisitions have sliced its membership rolls, and the year 2000 problem has stolen time from information systems executives, said

James R. Kinney, president of the 29-year-old information technology leadership organization based in Chicago.

Its annual conference, SIM Interchange '97, held here last week, attracted slightly more than 400 of its 2,700 members, roughly the same as last year.

OTHER GROUPS AFFECTED

SIM isn't alone. Many industry associations have been crippled by declining membership, such as the Association for Systems Management (ASM) [CW, May 6, 1996].

ASM has since splintered into

a handful of independent chapters, said Ann M. Purr, former international president of ASM who joined SIM's executive advisory council last week.

Declining membership and attendance at events are causes for concern, but cash flow isn't.

SIM has doubled its revenue in the past three years to about \$3.5 million, and expenses have nearly reached that figure, said Steven A. John, executive director of the group.

It did so through expanded programs and services, such as a year 2000 study published last November by University of North Texas Professor Leon Kappelman. That study poured \$20,000 into SIM's coffers.

SIM has been able to grow its war chest by 5% since 1994, said John, who declined to specify how large the fund is.

MEMBERS NEEDED

But revenue isn't enough; SIM needs members. To jump-start its growth, the association has doubled the number of working groups in the past three years. Those self-directed teams are composed of 12 to 20 IT professionals who select a topic that

SIM has doubled its revenue in the past three years to about \$3.5 million, and expenses have nearly reached that figure.

— Steven A. John, executive director, SIM

has a high impact on their organizations and the IT industry, such as the year 2000 issue.

For example, Rene' DeGeorge, leader of a SIM working group attempting to measure the business value of IT, is just the kind of newcomer SIM needs.

The same age as SIM, the 29-year-old IS planning manager works at Elf Atochem North America, Inc., a Philadelphia-based chemical manufacturer.

The working group has enabled DeGeorge to "know a little bit more" about the return-on-investment criteria that her

company's chief financial officer looks for from technology investments. "Standing around and watching [others be involved in user associations] doesn't do me any good," she said.

To bring in more members, SIM in 1992 launched a program called the Regional Learning Forum, an intense, nine-month course designed to groom future IT leaders.

So far, the forum has generated 325 graduates, all of whom were offered one-year memberships in one of SIM's 31 regional chapters. □



Corporate mergers and acquisitions have sliced membership rolls, and the year 2000 problem has stolen time from IS executives.

— James R. Kinney, president, SIM

Vendors trade jabs in browser battle

► Netscape, Microsoft tout Web-to-PC integration, but many aren't interested

By Carol Sliva

MANY CORPORATE users aren't exactly championing at the bit for the key new browsing technology that has Microsoft and Netscape wrestling: a consistent interface for navigating both hard drives and the World Wide Web.

Microsoft Corp. has insisted for more than a year that browser/operating system integration will make it easier for users to access and use information, whether it resides on the PC or the Internet. Last week, the Redmond, Wash., software giant finally shipped the Internet Explorer 4.0 browser, which provides the Active Desktop and shell integration functionality on the Windows 95 and NT platforms.

Not to be outdone, Netscape Communications Corp. unveiled its own Web-to-PC integration feature, code-named Aurora, due in the middle of next year. Aurora will give users

a single interface for viewing files from their hard drives, electronic mail and Web pages.

USER CONCERNS

Although users acknowledge that the consistent browser interface may represent the wave of the future, many are hesitant to take the plunge, fearful their users aren't ready for yet another interface change or skeptical about the business need for it.

"We haven't seen a demand for that," said David Leong, Web systems integrator at Sandia National Laboratories in Albuquerque, N.M. "I really don't think users are thinking that way."

Leong also has security concerns. "People want to know when they've left our intranet and they go to an external site," he said. "So if you blur the distinction between a local file to your hard drive and to the Internet, I think it's just going to be more confusing than anything else."

Larry Bolnick, manager of corporate information systems at Jeppesen Sanderson, Inc., an aviation information supplier in Denver, is tired of the tit-for-tat browser sparring.

"My take on this whole thing is: I really don't want to be in the middle of the power struggle of the super-computer people," Bolnick said. "It's so petty. We have this, and they don't. Then next week, they've got it."

Bolnick, whose company deploys Netscape's browser, said training 1,000 users after a major new change can be "a long, drawn-out process."

Even many IS professionals who are interested in the new feature aren't losing any sleep.

"When we're more

Web-based with everything, that's probably the right paradigm," said Sandy Sully, chief information officer at Xilinx, Inc. in San Jose, Calif. "It's just not high on my list right now."

Bechtel Corp. in San Francisco likes the idea of Microsoft's consistent interface as a means to simplify navigation for end users, according to technical manager Erik Innes.

Explorer's Active Desktop will let the company customize user interfaces to meet business requirements through the cre-

ation of a Hypertext Markup Language background page with a variety of components on the desktop that can push internal company information, Innes said.

But before Bechtel deploys those features to more than 10,000 users, the company plans some heavy testing. The beta period wasn't problem-free, and two cases in particular gave the company cause for concern, Innes said. One desktop lost its applications, which had to be reinstalled from scratch, and another lost network access.

"We have to look at the unique circumstances there, but [Internet Explorer's] not totally innocent. Obviously, it gets pretty deep in the system," Innes said.

Internet Explorer gives users the option to turn off any features, Microsoft officials noted. So companies may elect to disable any that are deemed unstable. □



Microsoft pranksters last week dumped a gigantic Internet Explorer logo on rival Netscape's front lawn. Netscape responded by positioning its Mozilla mascot, thumb pointing skyward, on top.

©1997 MCI Telecommunications Corporation. All rights reserved. Is this a great time, or what? is a service mark of MCI. Savings refers to AT&T private line vs. MCI frame relay rates effective July, 1997. 10 nodes or more.



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SNA FRAME RELAY SOLUTIONS

Is this a great time, or what?



Feds call IT labor emergency

CONTINUED FROM COVER 1

get tighter. In the next seven years, U.S. companies will require more than 1 million new IS workers, according to the Commerce report.

Demand will be highest for systems analysts, whose ranks must swell by more than 90% to fill 928,000 jobs in 2005.

Computer programmer jobs are projected to grow at a far slower rate — about 12% between now and 2005.

HELP WANTED

Earlier this year, by comparison, the Information Technology Association of America in Washington identified 190,000 unfilled IT positions at large and midsize companies.

Rising salaries are another sign of a growing IS labor short-

age. Between 1995 and 1996, the average hourly compensation for software architects rose by 20%, according to a survey conducted by William M. Mercer, Inc., a compensation consultancy in New York.

At a press conference last week, several government officials characterized the IT labor shortage as nothing short of a national emergency.

"Since information technologies affect every sector and industry in the U.S., severe shortages of workers could undermine U.S. innovation, productivity and competitiveness in the global market," said Commerce Secretary William M. Daley.

Sen. John Warner (R-Va.) went so far as to label the shortage "a national security issue."

"We're in a world market for the survival of our life," Warner said.

To address the issue, government, academic and industry representatives have formed six



Libbey "didn't receive one response" to an ad for applications people, says CIO John Zarb

task forces to study various causes of the shortage and recommend strategies for bolstering the ranks of IT professionals. One group will even focus on ways to change the popular image of an IT professional as that of a socially inept geek.

The six study groups will present their findings at a national IT work force convocation to be held in January at the University of California at Berkeley.

In the meantime, several companies are focusing on developing fresh IT talent through innovative career information and training programs never before available.

WIDESPREAD OUTREACH

Later this month, Microsoft Corp. will kick off a career expo blitz across 17 cities to help its certified resellers find the talent to fill more than 80,000 open positions. The software giant also has donated instructional software to 86 high schools and a senior citizens agency to pre-

Finding a silver lining

Complete Business Solutions, Inc. (CBSI) is taking a lemons-to-lemonade approach to the IT skills shortage. The payoff: at least \$1 million.

That's what the Farmington Hills, Mich., systems integration company expects to earn this year from a new external training and job placement program for entry-level computer programmers.

"We've always trained employees with computer science degrees in the how-tos of industrial programming," said CEO Raj Vattikuti. Now, "we are turning a cost center into a profit center" by selling the same training to outsiders, he said.

Since December, CBSI has trained about 80 nontechnical workers, and it subsequently hired several of those people to work on year 2000 and other IS projects.

Now it is taking its training programs on the road, offering classes in Cobol programming and other mainframe skills in Illinois, Ohio and South Carolina. Tuition for the 160-hour courses ranges between \$2,100 and \$3,000, depending on location.

To place the new workers after graduation, CBSI has teamed up with Management Recruiters International, Inc. in Grand Rapids, Mich., and Strategic Business Consultants International in Canton, Mich. The firms will pay CBSI \$1,000 for each CBSI-trained student they place in a job.

CBSI officials said the plan is to eventually franchise the training operation, which could grow into as much as a \$20 million business for the company. — Julia King

RIPPLE EFFECT

Severe shortages of IT workers are...

...driving up IT salaries by 15% to 20% annually

...squeezing government and nonprofits out of the competition for talent

...delaying development of leading-edge products, including exports

pare teenage students and older workers for careers as Microsoft technologists.

Also in production is a film about Microsoft technology careers that will be shown in hundreds of employment offices around the country.

Accustaff IT, a nationwide IS consulting company in Jacksonville, Fla., is offering its 7,000 employees free training in hot technologies, including Java

programming, SAP AG's R/3 applications software and Oracle Corp. database management systems.

So far, Accustaff officials said, the company has invested about \$1 million in the training, which employees can access anytime via a companywide intranet. □

Networking skills are hot; NT skills are scorching.

Page 102

IS risks shaky vendors for right fit

CONTINUED FROM COVER 1

server applications to take over its mainframe-based financial and manufacturing systems next year.

But Informix's problems were only "a minor factor" in the evaluation, said Jerry Bull, chief information officer at Clark. They were outweighed by Informix's tight ties with Baan — and by the nice deal Clark was able to get from the beleaguered Informix.

Three months later, Bull still isn't flinching despite a steady rain of bad news from Informix. "They'll either survive or they won't, but we think we'll be taken care of whatever happens," he said. "Informix is too big an operation to just disappear and leave us stranded."

Informix, in Menlo Park, Calif., is the latest poster child for vendors in trouble. Others in the crucible or there recently include Apple Computer, Inc.,

Banyan Systems, Inc. and Sybase, Inc. Most new customers shy away from such vendors, but Bull and a half-dozen other users interviewed last week said they were willing to take a calculated risk.

Even if a vendor isn't at the

zenith of its financial strength, a good fit of technology and business need is hard to pass up, the users said. Most didn't even feel the need to build any special protective mechanisms into their contracts.

Chances are that established

FOOD FOR THOUGHT

Prospective users evaluating whether to contract with a struggling vendor should determine:

- How much their application depends on features still being developed
- How quickly their business would be affected by development delays
- Whether another vendor involved in the deal will help if problems arise
- How easy it would be to move the application to another product

Source: Horwitz Group, Inc., Newton, Mass.

products with big installed bases will find new homes if their original owners go bust, they said. And open systems technology has fueled a belief that it won't be too onerous to switch vendors if necessary.

Then there are the low prices that can be bled out of vendors hungry for sales.

"Sybase really wanted to get a deal done, and they were not bashful about it," said Jim Poole, vice president of enterprise support services at Private Healthcare Systems, Inc. in Waltham, Mass. Private Healthcare, a managed-care services company, agreed last spring to use Sybase's database and development tools.

Sybase already had returned to the black after three straight quarters of losses last year, and the managed-care application that Private Healthcare wanted was available only on its database. But the Emeryville, Calif., database vendor was put through the wringer before the deal went through, Poole said.

"This was a departure from

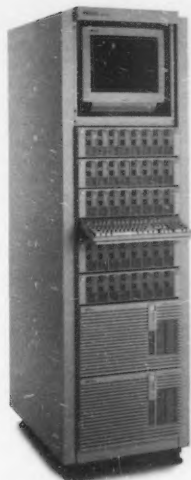
the norm for us, and we wrestled with it," Poole said. Over a week's worth of meetings, Sybase laid out short-term and five-year plans and gave Private Healthcare's IS managers a list of other customer prospects so they could see "if we were the only fish out there" nibbling at the vendor's bait, he said.

The MacManus Group, an advertising and public relations firm in New York, had similar doubts in mid-1996 when Sybase was in the midst of its losses. "But at the end of the day, it came down to faith in their management," said Jim Dileo, senior vice president of worldwide information technology at MacManus.

Dileo and his staff met with senior executives, regional managers, product developers and financial people at Sybase over a three-month period before signing on the dotted line.

So far, his faith has been rewarded: Sybase has turned in three straight profitable quarters, although sales have stayed flat. □

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NETWORLD/INTEROP '97

Users look to 'net to cut WAN costs

By Bob Wallace

FACED WITH bone-crushing pressure to cut WAN costs and demands to support remote users and business partners, IS managers are looking wistfully at the Internet as a cheaper and easier alternative to running their own networks.

The answer for some is a Virtual Private Network (VPN), which provides a set of private links through the Internet for corporate traffic. A few Internet service providers offer VPNs; many more are expected to follow.

VPNs can be used to let remote users gain access to corporate resources, to link with business partners as a less expensive alternative to electronic data interchange or to replace existing wide-area networks.

At Network/Interop '97 this week in Atlanta, 3Com Corp. and Siemens Corp./Newbridge Networks Corp. will demon-

strate equipment that Internet providers and carriers need in order to offer VPN services.

It is rumored that AT&T Corp., MCI Communications Corp. and IBM, which already have VPN equipment embedded in their networks, soon will offer VPNs.

VPN VOYAGE

"We'll be looking at VPNs in about a year for flexibility in more quickly adding sites here and internationally, communications with other companies and cost savings," said Troy Kent, a senior information technology specialist at Entergy Services, Inc., a regional utility in Gretna, La., and 3Com shop.

"We expect we can save a minimum of 50% by going with a VPN instead of a new leased-line network," Kent said. Entergy will use the VPN to support remote workers.

The VPN won't replace Entergy's core network in the near future. "We don't yet feel we can count on the Internet for mission-critical applications," Kent said.

Experts said companies initially will use VPNs to support remote users. That's because information systems managers are anxious to outsource this application, which isn't considered as critical as other core applications.

"Standardized tunneling and security should be set by mid-1998, which will set the stage for remote access applications,"

said Dan Merriman, an analyst at Giga Information Group in Cambridge, Mass.

"Users with applications that require strict performance predictability will come on in 1999 and 2000, because that's when the Internet will become reliable enough," he said.

Anthony Patrone is looking to VPNs to support remote users who currently dial in to a nationwide, toll-free number for network access.

"We expect we can save 30% to 40% by replacing the 800-number, which carries a steep cost, with a VPN," said Patrone, manager of the New York City network at Reuters America, Inc., a 3Com shop. "Our employees use their computers to remotely demonstrate the products that we sell to potential customers."

Deb Mielke, an analyst at TeleChoice, Inc. in Verona, N.J., said users need to decide before they opt for a VPN who will handle technical support for remote users. □

VPN checklist

- ▶ Access line and equipment
- ▶ Tunneling protocol (establishes links across the Internet)
- ▶ Authentication server
- ▶ Encryption (such as IPsec)
- ▶ Directory services (to help remote users find contacts)

Source: TeleChoice, Inc., Verona, N.J.

BANDWIDTH MANAGEMENT BARRAGE

Vendor	Product	Type
CheckPoint Software	FloodGate	Firewall add-on or stand-alone
Packeteer	Packet Shaper	Stand-alone
Ukiah Software	TrafficWare	Firewall add-on or stand-alone
Structured Internetworks	IPath/10M	Stand-alone

Starting price: \$2,800

Bandwidth management

CONTINUED FROM COVER 1

The systems can take the form of software add-ons for security firewalls and routers, or they can be single-purpose stand-alone systems.

The packages, which will be demonstrated this week at Network/Interop '97 in Atlanta, let information systems managers set policies for governing Internet access. Managers can allocate bandwidth by user or application.

BANDWIDTH SAVER

"We had a massive news feed that at times consumed our entire T1 line to the Internet," said Gary Regan, director of engineering at Macnica, Inc., a San Jose, Calif., provider of computer equipment to companies in Japan.

The firm installed a bandwidth management system from Packeteer, Inc. in San Jose. "We programmed the system never to let that feed exceed 128K bit/sec. That saves bandwidth for other uses," he said.

As a result, Macnica can avoid buying additional T1 access lines, which cost several thou-

sand dollars per month. "That's where the savings is, in cost-avoidance," Regan said. "And at \$7,200, the system pays for itself very quickly."

The bandwidth management systems also lets users see what goes across their access lines.

"Eighteen months ago, our management became very concerned about how widely PointCast was being used, with the perception being that it was choking our line," said Sheryl Olguin, a network manager at Harris Corp. in Melbourne, Fla.

Special network monitoring equipment was used, and a time-consuming analysis was done before her group determined that "push" content from PointCast, Inc. in Cupertino, Calif., accounted for only about 5% of the total bandwidth.

"We could have used a bandwidth management system to address management's concern much more quickly," Olguin said. "But there weren't any available then."

Olguin said she is interested in the systems' prioritization features.

"Bandwidth management products could provide a huge benefit for us and other firms because they let you prioritize by traffic type," she said. "I could, for example, give the highest priority and most bandwidth to business E-mail and access to our intranet and a much lower priority and less bandwidth to news feeds and PointCast."

Another approach used by Packeteer is winning praise from analysts.

Rate Control is a protocol that runs over TCP/IP and controls the rate at which end systems communicate to provide better performance over the network, said Tom Nolle, president of CIMI Corp., a consultancy in Voorhees, N.J. □

RELATED LINKS

For these and other related links, point your browser at: www.computerworld.com/links/971006vpnlinks.html

► VPN Checklist

www.tradewave.com/products/securevpns.html

► Glossary of Virtual Private Network terms
www.extendsys.com/products/vpn/vpnglossary.html

Novell unveils NDS package for Win NT

By Laura DiDio

NOVELL, INC. said it will finally unveil its unbundled Novell Directory Services (NDS) for Microsoft Corp.'s Windows NT at this week's Network/Interop '97 trade show in Atlanta.

The Novell connectivity package will let businesses manage their mixed NetWare and Windows NT networks as a single entity. NDS for NT is the only product thus far that lets companies centrally administer both products via the NDS directory.

Although Novell officials declined to provide any details,

three beta-test users and analysts familiar with the software said the Provo, Utah-based firm has expanded the capabilities of the product to support Microsoft BackOffice applications.

AUTOMATION

According to Bob Sakakeeny, an analyst at Aberdeen Group, Inc. in Boston, a business with multiple Microsoft Exchange Messaging Servers in various locations must manually synchronize the NT domain directories.

Using the NDS for NT will let administrators automatically add, delete, change and syn-

chronize directories from a central console, he said.

An information systems manager at a large Southern oil company who requested anonymity, said the NDS for Windows NT beta package has "halved" his administrative time on test networks. "It's been a godsend. We have lots of Windows NT in our remote offices, and prior to this, there was no way to easily monitor and manage them," he said.

"It's awesome and just what I've been waiting for," agreed Matt Rice, a senior network manager at USTrust Bank in

Cambridge, Mass.

Rice was especially enthused about a facility in NDS that will allow him to designate low-level management tasks, such as changing passwords, to less experienced network managers without giving them full administrator privileges that could compromise network security.

Novell will ship two versions of NDS on NT. The first, due by year's end, will run on NetWare and IntranetWare file servers and will support NT Servers and NT Workstation clients.

The second version will run natively on a Windows NT Server and is slated to ship in the first quarter next year. Pricing hasn't been set. □

NETWORLD/INTEROP '97

Reliability issues stalk client/server

By Patrick Dryden

TWO NEW SURVEYS highlight the big problems IS managers still face when trying to build and maintain client/server networks at the reliability levels demanded by business users.

Distributed client/server systems still aren't as reliable as mainframes, and the performance of routed networks remains unpredictable, the surveys found.

That explains why an estimated 45,000 information systems professionals will be in Atlanta this week searching for answers at Networld/Interop '97.

"They seek help shifting from the old style of fault management — is the box broken or the network congested — to the new demand for stable, predictable service," said John McConnell, conference adviser and president of McConnell Consulting, Inc. in Boulder, Colo.

Services, Inc. (INS) said they were dissatisfied or very dissatisfied with their ability to establish and manage service-level agreements that guarantee performance

of network delivery for their users.

Tools for measuring network performance are scarce or inadequate, most respondents told INS, which is a network

integrator and service provider in Sunnyvale, Calif.

But people and politics seem to be the greatest barriers to improving performance management capabilities. More network managers said problems such as staff expertise and justifying costs to upper management create more trouble than implementing the available tools. □

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Greatest barriers to improving network performance management capabilities

Justifying costs/benefits to upper management	49.75%
Experience of staff/training required	48.7%
Inadequate manpower/staff turnover	47.78%
Product capabilities vs. requirements	44.83%
Determining performance management requirements	40.89%

Base: 203 IS organizations; multiple responses allowed

Source: International Network Services, Inc., Sunnyvale, Calif.

Mainframe-oriented sites reported fewer outages from security breaches and operating system errors, less downtime and better recovery mechanisms from outages. So says a joint study by Arthur Andersen, International Data Corp. and the Merit (Maximizing the Efficiency of Resources in Information Technology) Advisory Council.

In the Merit Project, founded by Computer Associates International, Inc., CA users and vendor partners attempt to define common problems that can be solved through better management tools.

Seven out of 10 mainframe sites were able to achieve at least 99.5% uptime, but only half of client/server environments could do so, according to the Merit study.

Downtime costs more than \$50,000 per hour for 40% of the 1,850 IS officials surveyed. A few of the respondents said downtime costs a whopping \$1 million per hour for their organizations.

More than half the 200 network managers surveyed by International Network

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Desktops for the MIS director who'd rather
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Listen to your business.

Users slow to accept scalable server standard

► Sequent scores with NUMA; will others follow suit?

By Jaikumar Vijayan

IN THE YEAR since Sequent Computer Systems, Inc. announced computer systems based on Non-Uniform Memory Access (NUMA) technology, several major corporate users bought NUMA servers as a low-cost mainframe alternative.

But a lack of widespread vendor support for NUMA could slow acceptance of the technology during the next few years. Sequent is still the only vendor that ships NUMA systems in volume.

NUMA lets users scale applications far beyond the limits imposed by current symmetrical multiprocessing (SMP) technologies. The scalability is required for running large database and online transaction processing applications.

PICKING UP THE BALL

"In a sense, NUMA takes up where SMP leaves off," said James Garden, an analyst at Technology Business Research, Inc. in Hampton, N.H. "But unless more vendors support it as a standard, NUMA could end up being an orphan technology."

Data General Corp. in Westboro, Mass., announced NUMA systems earlier this year but has only recently started to ship the systems.

Sequent last week became the first vendor to demonstrate a 32-processor NUMA system that runs an Oracle Corp. database application on Windows NT.

So far, Sequent claims to have sold 300 of the servers at prices ranging from \$500,000 to \$2 million.

NUMA REPORT CARD

Installations: 300

Major customers: Boeing, Ford, Millipore, Oxford Health

Typical installation price: \$500,000 to \$2 million

Latest feature: Windows NT support on NUMA

In the process, the company also racked up some major wins, including a \$105 million contract with The Boeing Co. and a multimillion-dollar contract with Oxford Health Plans, Inc. in Norwalk, Conn.

Despite NUMA's promise, most vendors have resisted moving to the new technology and are playing it safe by focusing on greater SMP scalability.

For some users, SMP is enough.

"Most of our applications certainly don't require more scalability than what we already have" from SMP servers from Sun Microsystems, Inc., said Hugh Allan, manager of information technology at Dunlop Tire Corp. in Amherst, N.Y.

At the low end and midrange end of

the market, NUMA isn't much cheaper than SMP, analysts said.

And the increased scalability that NUMA servers offer usually results in

higher entry-level costs.

"One concern for me is the price of quads in the NUMA space," said Ron Hawkins, director of technology at Millipore Corp., a user of Sequent NUMA servers in Bedford, Mass.

Hawkins welcomed the availability of Windows NT on NUMA, but he said his decision to buy such systems will depend on how well NT scales beyond four processors — and how much it will cost to buy that extra scalability. □

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Fending off NT, Sun and Digital bolster Unix

By Jaikumar Vijayan

WINDOWS NT may be the new religion, but Unix vendors are giving their believers plenty of reason to keep the faith.

Sun Microsystems, Inc. and Digital Equipment Corp. this week will make

announcements designed to extend the reliability, availability and scalability of their respective Unix platforms.

Sun is adding clustering features that will let users scale their systems from workgroup and departmental levels all the way to a high-end enterprise server.

And Digital is releasing the next version of its Unix operating system, which offers new Java and World Wide Web support and more clustering capabilities. Both companies are backing up their performance claims with formal uptime guarantees of more than 99.5% per year

that penalize the vendors if they fail to meet agreed-upon application availability levels.

Although such insurance is extremely costly to buy, it makes sure the vendor picks up the tab in case the guarantees aren't met.

Such features are vital for users who want to run large, critical enterprise applications on Unix boxes, particularly for those who are moving off mainframe environments, said Joyce Becknell, an analyst at Business Research Group in Boston.

MAINFRAME TURF

Sun's announcement "positions its operating system in the same territory that has been traditionally reserved for mainframes" in terms of performance and reliability, said John Webster, an analyst at The Yankee Group in Boston.

Clustering technology's high availability is "something we are most interested in, particularly for applications that interface with our [internal] customers."

— Hugh Allan, Dunlop Tire

Mountain View, Calif.-based Sun's latest enhancements to its Full Moon clustering technology let users link up to four of Sun's Enterprise 10000 servers in a configuration that can support up to 256 processors, 256 I/O channels and 256G bytes of memory. Cluster Server 2.0 software also will come with high-availability, application load-balancing and cluster management capabilities.

Digital is rolling out a faster version of its performance-boosting Memory Channel Interconnect technology and is boosting its TruCluster capabilities to include clustering support for up to eight of its high-end TurboLaser AlphaServers.

GRAND SCALING

The scalability offered by such technologies is vital, said Alan Hubbard, vice president of database service and support at Boston-based Fleet Insurance Group, Inc. The company uses Sun's midrange servers to run a large data warehousing application that Hubbard said he expects will soon contain more than 1T byte of raw data.

"We wanted something that would scale... We looked at [massively parallel processing] servers to run our database, but it was far too expensive from a price/performance standpoint," Hubbard said. The company instead chose Sun's Unix clustering technology.

And the high availability offered by clustering technology is "something we are most interested in, particularly for applications that interface with our [internal] customers," said Hugh Allan, manager of information technology at Sun user Dunlop Tire Corp. in Amherst, N.Y. □

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CONTINUED FROM COVER 1

Veterans said senior managers need to warn job applicants about the on-call expectations, watch for signs of job burnout and compensate staff with undisturbed time off. They must also stay involved in the network troubleshooting process.

"We have to know what [network] problem could put us in the dirt when the bank branches open in the morning," said James Brown, senior vice president of network operations at NationsBank Corp. in Charlotte, N.C.

That means Brown's pager goes off all night, too. And he was one of 20 information systems staffers — from low-level technicians through executive officers — on the telephone last Christmas Eve at 8 o'clock, dealing with a disruption in the bank system's wide-area network until 5 o'clock Christmas morning.

WHY THEY DO IT

Network caretakers have many reasons for accepting the job's disruption to their personal lives. "My bonus is tied to 99.98% WAN uptime," said Patrick Meyers, a technical consultant at the network center of payroll processor Ceridian Employer Services, Inc. in Bloomington, Minn.

After-hours duty is a matter of pride for a team of eight at the National Institutes of Health (NIH).

"We built this network, so we're trying to string it along until we get the budget to staff a real network operation center," said Jim Brunetti, network engineering chief at the NIH in Bethesda, Md.

The government won't pay team members overtime to maintain the research network, but it does provide Integrated Services Digital Network lines and computers so they can try to fix faults from home, Brunetti said. Now they rotate the pager among several staffers, after one engineer nearly burned out from spending too many nights and weekends maintaining the network by himself.

Most said they enjoy the challenge of diagnosing and fixing problems.

"I like puzzles," said Murali Kanaga, a senior network engineer at Versant Object Technol-

ogy, Inc. in Fremont, Calif. "I'm single, so I can put up with carrying a cell phone and pager. This could drive me nuts, but I take a break and come back because I enjoy playing with all the complex pieces."

Networking is "fun work with fun people. It may get tiresome, but it doesn't get old," said David Day, a support specialist at Sulzer Orthopedics, Inc. in Austin, Texas.

OTHERS SUFFER

But full-time responsibility for networks is tough on family life.

The "burden" of pager duty means staying in the area and close to a phone, Brunetti said. "My wife understands that we can't go to the beach on some weekends and that when problems come up, we skip the movie, and I may be gone five hours."

Leaving family functions involving children is even harder.

"Whenever the pager goes off, I see that disappointed look on my children's faces, and they ask if I have to fix a fiber cut," said Rick Siegel, an event controller who isolates faults in Sprint's nationwide fiber-optic network.

Children have a tough time understanding the importance of a broken network. Ask Dennis DeMari, technical services manager at Factory Mutual Engineering & Research Corp. in Norwood, Mass.

DeMari said he had to leave his family during vacation at Walt Disney World because highly paid end users "were sitting around at God knows how many dollars per hour waiting for the network to come back up." He had to leave his daughter's First Communion party, and he can't coach basketball and soccer teams without first securing a backup.

Staffers get some sort of compensation for the extra hours, ranging from official "beeper pay" to unofficial time off for the overtime. And supervisors said they watch the staff carefully for signs of burnout or unhappiness with the job.

"If you don't like this type of job intruding on your personal life, you leave after about a year," said Adrian Van Bourgondien, a senior manager of transmission and surveillance at

NETWORK LINGO

Some of the choice terms you may hear in a network operations center:

Backhoe fade: A connection fades out of service, possibly because of errant excavation by a backhoe.

Beating meeting: Weekly session when senior business executives grill technical managers about network problems that affected end users.

Billy Backhoe: Anyone who damages transmission lines.

Cata: Short for "catastrophic failure," which network managers don't like to say.

Code 13: A problem with no clear cause, such as an intermittent failure.

FSBE ("flizz-be"): Fiber-Seeking Backhoe Event, a definite break in a bundle of fiber-optic lines.

Gopher: Loss of a single strand in a fiber-optic bundle, possibly because of rodents gnawing buried lines.

Meltdown: A serious failure. (At the NIH, the rupture of a steam line in a wire closet melted a router, hub and modem down to the metal shelf.)

Smoking gun: A clear cause of a problem, such as a carrier failure.



And one you'll never hear:

Oops: Console operators are forbidden to use this expression, which causes panic among staff and supervisors.

MCI Communications Corp. in Washington.

But network managers know what they are getting into and expect to do whatever it takes, Van Bourgondien said. Although staff turnover for IS organizations typically runs at 15%, MCI's turnover rate is only half that figure, he said. "We're lucky our network staff thrives on stress."

Carriers and corporations with large IS organizations have the flexibility to counter job burnout. They can offer new assignments and easily shuffle a deep staff to balance time spent in emergency efforts.

The situation is different at smaller IS organizations, where all IS professionals "work 50- to 60-hour weeks and rotate the pager," Day said. But there is one benefit to that approach: The load-sharing means that systems and applications support staffers also learn more about the network. "The cross-training breaks down walls in the group," Day said.

TIME OFF

Maintaining a network around the clock every day of the year is important, but staffers still must have uninterrupted time off and less disruption to their home life, said David Brown, director of network services at *The New York Times*.

At the *Times*, the IS department spreads the burden by giving the support desk the tools and ability to handle 80% of network calls and trouble tickets, he said. That frees network engineers to deal with tougher problems and development.

Sharing the burden of responsibility is the key to keeping networks healthy — and staff happy.

Sprint's director of network management control, Jerry Usry, often is found babysitting employees' children when the parents have to rush back to the network operations center to

deal with an emergency.

Top-level executives also participate in marathon conference calls and all-night troubleshooting to support their staff.

As one network manager put it, "There's an old saying in network control centers that 'If I'm awake, then everyone else should be, too.'" □

Network managers seek more remote-control tools

By Patrick Dryden

NETWORK MANAGERS attending Network/Interop '97 in Atlanta this week will seek tools to manage their networks remotely — thus making their homes an extension of the network operation center.

Remote access is a blessing, not a curse, for David Brown, director of network services at *The New York Times*. When he hops out of bed, he fires up a coffee pot and a laptop computer to start his workday in the kitchen.

Via the Web, Brown checks network performance reports from Concord Communications, Inc.'s Network Health monitoring software. The reports give him a head start, so he can assign engineers to investigate emerging problems before he begins his commute.

Diagnosing and fixing problems remotely is quicker, easier and less painful than leaving home for the control center at headquarters in Times Square, he said.

Most vendors of management software are making it possible to get network reports and interactive control via the Web. Cisco Systems, Inc., for example, will demonstrate its new Cisco Resource Manager and describe plans to transform all of its tools into Web-based Java modules that draw on a common database of network information.

Of course, network managers will have fewer emergency calls if they build more reliability into their networks and replace aging networks. So they will also be shopping at Network/Interop for tools to cut disruptions.

"You will go crazy patching old cable systems, hubs and disk drives if you don't keep up with technology," said David Day, a support specialist at Sulzer Orthopedics, Inc. in Austin, Texas.

Exhibitors will roll out the latest transmission systems, inter-networking gear, servers and monitoring tools this week to overcome faults — and to consume budgets. □



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Computer Industry

PeopleSoft jumps into midsize market

► Vendor joins Oracle, SAP in offering ready-to-go enterprise packages

By Randy Weston

PEOPLESOFT, INC. may soon be a one-stop shop for inexpensive and easy client/server systems.

The Pleasanton, Calif.-based company has formed a new division to serve midsize companies with annual revenue between \$50 million and \$250 million.

The division initially will deliver basic functions of an enterprise resource planning system to clients, loaded and ready to go on Hewlett-Packard Co. or Compaq Computer Corp. servers with an Oracle Corp. or Microsoft Corp. database, Windows NT operating system and implementation help included in the deal (see chart).

OUTSOURCING PLAN

But PeopleSoft officials said the eventual plan is to form an outsourcing service for midsize companies in which PeopleSoft runs the systems for users, said John Stammen, vice president and general manager at PeopleSoft.

Analyst Judith Hodges at International Data Corp. in Fram-

PeopleSoft Version 7 components	
Component	Applications
Financial management	General ledger, assets, budgets, projects
Procurement	Payables, purchasing
Revenue administration	Receivables, billing
Order administration	Order and inventory management
Human resources	Human resource management, payroll interface
Manufacturing	Production planning and management, engineering, production management, bills and routing, cost management

mingham, Mass., said such programs are just what the users in this market need because they don't have the resources to dedicate to a massive business process re-engineering effort and yearlong software implementation project.

"This market just can't deal with the complexities of an implementation. They want it to be as simple as possible and at the lowest cost," Hodges said. She

said that with these kinds of programs, users don't have to do it themselves, and with an outsourcing program, they "can transfer partial ownership to PeopleSoft."

\$5000 STARTING PRICE

For now, the PeopleSoft Select program consists of getting users going on their own business process automation system for a starting price of \$500,000.

Most of the work will be done at PeopleSoft's implementation centers in major cities around the country, the eventual homes of the outsourced systems down the road.

NEW BATTLEGROUND

In the past year, Oracle Corp. and industry leader SAP AG launched similar quick implementation programs to attack the midsize market (CW, July 14; Aug. 19, 1996).

With the Fortune 500 market saturated, the middle market is the new battleground for vendors looking to gain market share.

Hodges said PeopleSoft may have the right formula. The main difference between PeopleSoft's offering and SAP and Oracle's offerings is that PeopleSoft is taking on the entire project itself with a direct sales channel. SAP and Oracle use their reseller channels and consulting partners to help with the work.

"PeopleSoft needs to develop market visibility as quickly as it can. The direct sales force can help them do that probably more quickly than [resellers]," Hodges said. □

Ray Lane: No need to worry about Oracle

► Company's president defends sales force tactics

While thousands of database administrators wandered the halls at Oracle Corp.'s OpenWorld '97 in Los Angeles last month, Oracle President Ray Lane spoke with Computerworld Senior Editor Craig Stedman about business, sales tactics and Microsoft.

CW: Oracle's database sales grew only 6% in your first fiscal quarter. Is that something to worry about?

LANE: That doesn't bother me. It was 12% if you exclude the currency effects, and getting anything out of Q1 makes me happy. It's hard to get the sales force refocused after the fourth quarter. We still expect database sales to grow 25% this year,

and we will take market share to do it.

CW: On the other hand, your applications business doubled in the first quarter.

LANE: But it was an easy comparison [with last year]. I knew I was going to have a great applications quarter. We've got a tougher comparison coming up in the second quarter, so I'll be happy with 50% to 60% growth.

CW: How do you think you stack up vs. SAP in that market?

LANE: We've got to do better in Europe. They own that. PeopleSoft has the same problem that we do: We're the dumb American companies and we had to



"We still expect database sales to grow 25% this year, and we will take market share to do it."

RAY LANE, PRESIDENT, ORACLE

learn how to localize our products for the European market. Now we've done that. But for the next few years, if we're still No. 2 [behind SAP], that's OK.

CW: Your sales of development tools have been on the decline. Any expectation of a turnaround there?

LANE: The tools business in general is not one that I'd choose to go into to make money. It has got a poor pricing model, and our sales force is kind of like Willie Sutton: They go where the money is. Tools

are not a big deal.

CW: Oracle is one of the vendors that get mentioned by users for its unpleasant sales tactics. You have tried to change that reputation. But is there still a perception problem?

LANE: There's no question Oracle had a lot of tricks for getting revenue out of people in the late '80s and early '90s. But anybody who knows me knows we don't use strong-arm tactics.

I tell my sales force they have to earn the right to ask for an order from a customer. But if a

Gateway lays off 300 as part of restructuring

Several weeks after announcing it was unlikely to meet earnings expectations for the third quarter, Gateway 2000, Inc., said it will lay off 300 workers, or about 3% of its workforce, as part of a restructuring move.

The North Sioux City, S.D., company, which also recently entered the corporate desktop, server and laptop markets, may be cutting costs to make its financial appearance look better, analysts said. The company isn't losing money, but it isn't growing as fast as expected.

Gateway didn't reveal what types of workers will be cut from its total workforce of about 12,000. But it said some workers would be reassigned to other jobs, and others would be given severance packages.

The company also said it expected to continue hiring to support growing sales volumes and be back up to current staffing levels by year's end.

Still, analysts said competitors may take advantage of Gateway's problems.

"This doesn't bode well for Gateway in the highly competitive situation they are in," said Roger Kay, an analyst at International Data Corp. in Framingham, Mass. Kay said it may be seen as a weakness that corporate customers will view negatively.

— April Jacobs

customer says to me that my sales force is aggressive, I don't have a problem with that. I like aggressive salespeople.

CW: How big of a database threat is Microsoft?

LANE: I worry a lot about Microsoft. So far we have about the exact same market share on Windows NT as they do, but those guys have a lot of money and a lot of talent.

I expect that in a year or two, they're going to offer a competitive product. I'm not counting on them taking themselves out. □

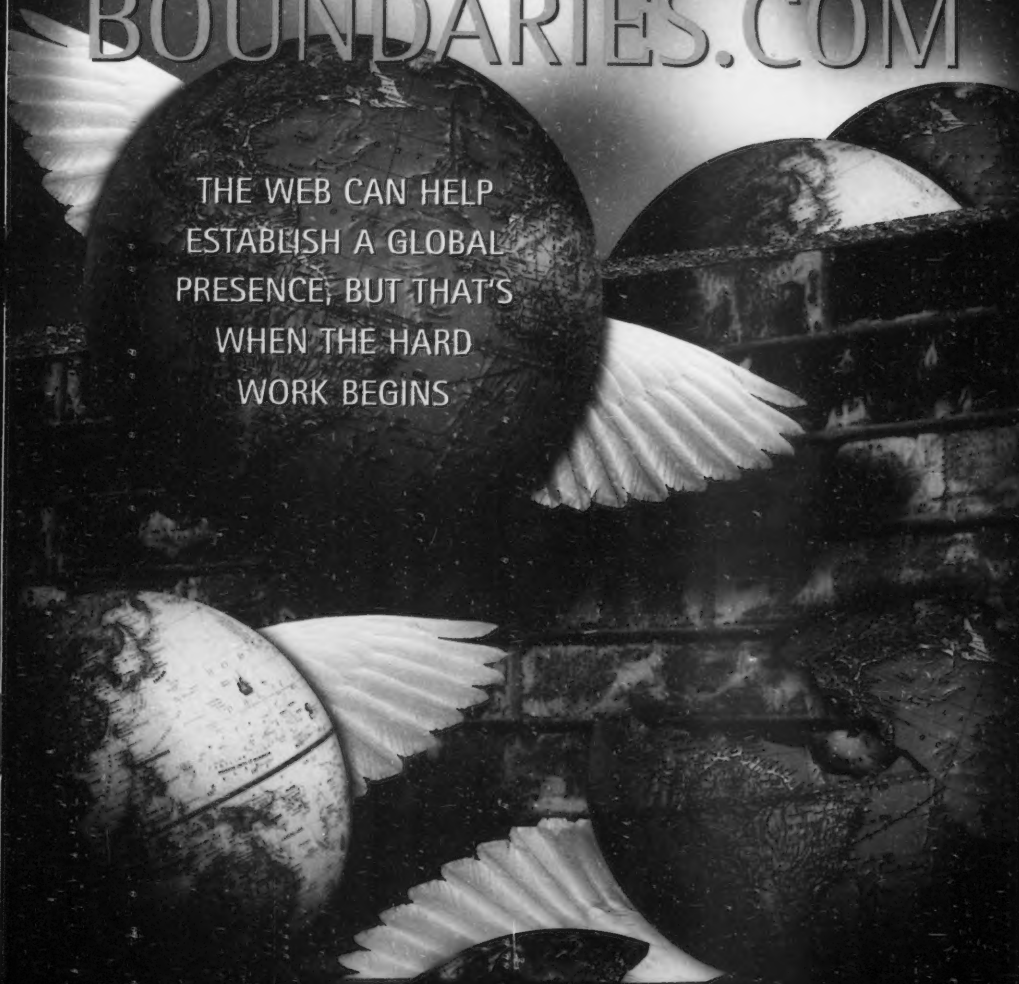
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COMPUTERWORLD

October 6, 1997

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EDITOR'S NOTE

Worldwide Wanna-be's

Common wisdom holds that getting a presence on the World Wide Web can instantly give you access to global commerce.

But that just sounds a bit too easy, doesn't it? Global companies that have been doing business internationally in the physical world know that nothing — not even the mighty Internet — can erase all the boundaries with which they've contended for years, be they cultural, technical, regulatory or legal in nature.

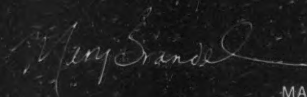
So we decided to look behind the curtain. What does the Internet offer to organizations seeking an easier way to attract or maintain an international presence? We spoke with traditional companies such as U.S.-based The Sharper Image and Itochu in Japan, as well as those that exist only on the Web, such as the Internet Bookshop in the UK.

Here's what we found. The Web can aggregate information such as company names and product attributes, providing a great one-stop shopping experience for manufacturers, suppliers and customers in the same industry, not to mention giving them an easy way to communicate.

It can also make regional business recognizable to foreign business partners such as Traitement Cooperatif Et Integration de Systeme, a French company that now makes half of its revenue on international sales, thanks to the Web.

But there are also things the Web can't help you with: It won't calculate international shipping charges, estimate delivery dates for a high volume of foreign buyers or translate currency. How you handle these and other hidden gotchas are what will separate your company from other global wanna-be's.

Perhaps Shikhar Ghosh, chairman of electronic commerce software maker Open Market, Inc., puts it best: "The Internet might not have trading boundaries. But packages do."



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World

South African Bank Solves an Object Puzzle



BY RON CONDON

At first sight, the problems facing Vincent Coetzee, chief technologist at Rand Merchant Bank in Johannesburg, South Africa, are much like those at any other company. He has legacy systems he wants to link to new systems, and he wants to use the Internet to open up data and applications to overseas offices, mobile staffers and customers.

But while for most people a legacy system is one written in Cobol, Coetzee's legacy is a pile of programs written in the object-oriented language Smalltalk and running on Sun Microsystems, Inc. servers.

The oldest programs date

back six years, when the bank first adopted Smalltalk, and for some applications, Coetzee (pictured above) wants to continue using that language. But today he takes a three-pronged approach: Smalltalk to enhance existing programs, C++ for high-performance applications and Java for all client interfaces.

The resulting system, scheduled to roll out later this year to offices around the world, will allow all software to be generated and maintained from the Johannesburg headquarters, while providing Rand Merchant Bank staffers and customers with access to the

view

TRENDS, ISSUES AND IDEAS FROM AROUND THE GLOBE

systems from the Internet.

To create a seamless link between the three types of object code and the Microsoft Corp. client environment, Rand Merchant Bank used several object request brokers, Common Object Request Broker Architecture (CORBA) standards and some help from Sun.

"Sun helped us wrap CORBA objects so that they worked correctly in the OLE environment," Coetzee said. "Using the NEO object bridge, you point it at a Solaris server that is running the NEO ORB, and it just makes those objects available as if they were OLE objects."

To incorporate the Smalltalk systems, Rand Merchant Bank used another ORB, called Distributed Smalltalk, from Parc-Place Systems, Inc.

The last piece of the puzzle was Joe, a Java ORB from Sun. Having decided to write

"In all cases, the objects you get via the ORB or the [NEO] object bridge look as though they are objects that are local to that environment," Coetzee said. "So when you use Joe with Java, they look like Java objects. When you use them with the object bridge, they look like OLE objects."

Coetzee said Joe's major strength is that it brings down only the data it needs, which then gets cached locally and gets downloaded again only if the class changes.

SIMPLER MAINTENANCE

For a global company such as Rand Merchant Bank, this has tremendous implications for systems maintenance. "That means you don't need to go round to each of your workstations and install Joe. You put the classes that constitute Joe on to your Web server, and

so that a customer, for example, would access a hobbled version of the application for inspecting his own investment portfolio.

The pilot system has already been running in South Africa, where staffers access it via 28.8K bit/sec. dial-up modems.

"The first time you access the system, it takes about 10 minutes for all the required classes to download. And then screen updates are virtually instantaneous," Coetzee said. "Subsequent access to the system takes a minute or two while the system verifies the classes and downloads any that have changed."

Rand Merchant Bank is now setting up a second pilot with the Singapore office and has hit a few initial problems with delays over the Internet between South Africa and Singapore, which it hopes to cure by coding the system differently. The company hopes to do a final rollout within three to six months.

Looking back on what has been achieved, Coetzee said he is surprised at how well the various systems have plugged together. And his enthusiasm for the object-based approach is intact: "The whole [object-oriented] paradigm certainly speeds things up. Once you have an infrastructure of objects, it becomes quite trivial to support new financial instruments and do calculations on them," he said.

CONDON IS A FREELANCE WRITER BASED IN LONDON.

THE SYSTEM WILL ALLOW all software to be generated and maintained from headquarters, while providing staffers and customers with access from the Internet.

all application front ends in Java, Coetzee had to make a link with the Smalltalk applications, which were left mainly unchanged. Using Joe, the bank can pull the full functionality of the Smalltalk program and run it in the Java environment.

as your users use them via their Web browser, they will come on to their machines as necessary."

This approach has other spin-offs, too. Rand Merchant Bank is experimenting with running different versions of the systems at different URLs

WIRED WORLD

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VIETNAM

- The population of Vietnam is 75.9 million.
- The gross domestic product is \$19.8 billion (U.S.).
- The total IT market in 1996 was \$287.2 million (U.S.), up 69% from '95. In the year 2000, it is expected to reach \$1.04 billion (U.S.).
- Vietnam has a total of four Internet service providers as of mid-1996.

SOURCE: INTERNATIONAL DATA CORP.

The Business Software Alliance and the SPA released their second study on global software piracy, evaluating sales and market data for 60 countries in the six major world regions based on 26 business applications. The study estimates that of the 523M new business applications used globally in 1996, 225M units were pirated. This represents a 20% increase over 1995. Here are some study highlights:

- Highest software piracy rate: Eastern Europe (80%).
- Lowest piracy rate: North America (28%).
- Highest loss to piracy: North America (\$2.7B).
- Countries with high piracy rates: Vietnam (99%), China (96%), Oman (96%) and Russia (91%).
- Countries with low piracy rates: U.S. (22%), Australia (32%), UK (34%), Denmark (35%), New Zealand (35%) and Germany (36%).
- Largest decrease in overall piracy rates: Asia Pacific (9% decline from 1995).

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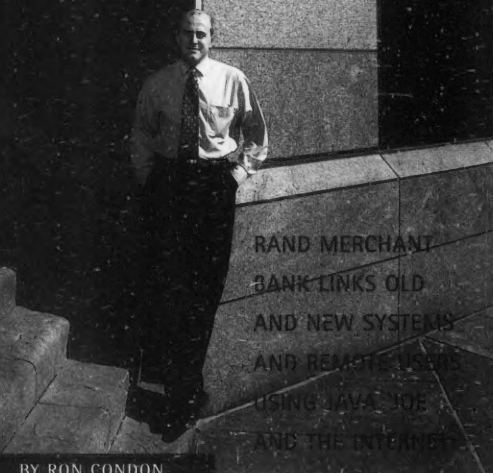
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South African Bank Solves an Object Puzzle



BY RON CONDON

At first sight, the problems facing Vincent Coetzee, chief technologist at Rand Merchant Bank in Johannesburg, South Africa, are much like those at any other company. He has legacy systems he wants to link to new systems, and he wants to use the Internet to open up data and applications to overseas offices, mobile staffers and customers.

But while for most people a legacy system is one written in Cobol, Coetzee's legacy is a pile of programs written in the object-oriented language Smalltalk and running on Sun Microsystems, Inc. servers.

The oldest programs date

back six years, when the bank first adopted Smalltalk, and for some applications, Coetzee (pictured above) wants to continue using that language. But today he takes a three-pronged approach: Smalltalk to enhance existing programs, C++ for high-performance applications and Java for all client interfaces.

The resulting system, scheduled to roll out later this year to offices around the world, will allow all software to be generated and maintained from the Johannesburg headquarters, while providing Rand Merchant Bank staffers and customers with access to the

view

TRENDS, ISSUES AND IDEAS FROM AROUND THE GLOBE

systems from the Internet.

To create a seamless link between the three types of object code and the Microsoft Corp. client environment, Rand Merchant Bank used several object request brokers, Common Object Request Broker Architecture (CORBA) standards and some help from Sun.

"Sun helped us wrap CORBA objects so that they worked correctly in the OLE environment," Coetzee said. "Using the NEO object bridge, you point it at a Solaris server that is running the NEO ORB, and it just makes those objects available as if they were OLE objects."

To incorporate the Smalltalk systems, Rand Merchant Bank used another ORB, called Distributed Smalltalk, from ParcPlace Systems, Inc.

The last piece of the puzzle was Joe, a Java ORB from Sun. Having decided to write

"In all cases, the objects you get via the ORB or the [NEO] object bridge look as though they are objects that are local to that environment," Coetzee said. "So when you use Joe with Java, they look like Java objects. When you use them with the object bridge, they look like OLE objects."

Coetzee said Joe's major strength is that it brings down only the data it needs, which then gets cached locally and gets downloaded again only if the class changes.

SIMPLER MAINTENANCE

For a global company such as Rand Merchant Bank, this has tremendous implications for systems maintenance. "That means you don't need to go round to each of your workstations and install Joe. You put the classes that constitute Joe on to your Web server, and

so that a customer, for example, would access a hobbled version of the application for inspecting his own investment portfolio.

The pilot system has already been running in South Africa, where staffers access it via 28.8K bit/sec. dial-up modems.

"The first time you access the system, it takes about 10 minutes for all the required classes to download. And then screen updates are virtually instantaneous," Coetzee said. "Subsequent access to the system takes a minute or two while the system verifies the classes and downloads any that have changed."

Rand Merchant Bank is now setting up a second pilot with the Singapore office and has hit a few initial problems with delays over the Internet between South Africa and Singapore, which it hopes to cure by coding the system differently. The company hopes to do a final rollout within three to six months.

Looking back on what has been achieved, Coetzee said he is surprised at how well the various systems have plugged together. And his enthusiasm for the object-based approach is intact: "The whole [object-oriented] paradigm certainly speeds things up. Once you have an infrastructure of objects, it becomes quite trivial to support new financial instruments and do calculations on them," he said.

CONDON IS A FREELANCE WRITER BASED IN LONDON.

WIRED WORLD

Notes from Around The Globe

VIETNAM

- The population of Vietnam is 75.9 million.
- The gross domestic product is \$19.8 billion (U.S.).
- The total IT market in 1996 was \$267.2 million (U.S.), up 69% from '95. In the year 2000, it is expected to reach \$1.04 billion (U.S.).
- Vietnam has a total of four Internet service providers as of mid-1996.

SOURCE: INTERNATIONAL DATA CORP.

The Business Software Alliance and the SPA released their second study on global software piracy, evaluating sales and market data for 80 countries in the six major world regions based on 26 business applications. The study estimates that of the 523M new business applications used globally in 1996, 225M units were pirated. This represents a 20% increase over 1995. Here are some study highlights:

- Highest software piracy rate: Eastern Europe (80%).
- Lowest piracy rate: North America (28%).
- Highest losses to piracy: North America (\$2.7B).
- Countries with high piracy rates: Vietnam (99%), China (96%), Oman (95%), and Russia (91%).
- Countries with low piracy rates: U.S. (27%), Australia (32%), UK (34%), Denmark (35%), New Zealand (35%) and Germany (36%).
- Largest decrease in overall piracy rates: Asia Pacific (9% decline from 1995).

THE SYSTEM WILL ALLOW all software to be generated and maintained from headquarters, while providing staffers and customers with access from the Internet.

all application front ends in Java, Coetzee had to make a link with the Smalltalk applications, which were left mainly unchanged. Using Joe, the bank can pull the full functionality of the Smalltalk program and run it in the Java environment.

as your users use them via their Web browser, they will come on to their machines as necessary."

This approach has other spin-offs, too. Rand Merchant Bank is experimenting with running different versions of the systems at different URLs



GLOBAL BOUNDARIES.com

THE INTERNET
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OF THE PAIN OF
GOING GLOBAL
By Alice LaPlante

Just 18 months ago, Stephen Bloomberg's job was a whole lot harder.

As operations manager at Encore Sales Ltd., a distributor of private-label merchandise to drug stores, department stores and discount stores throughout Canada, Bloomberg still "sourced" the more than 5,000 products distributed by his Concord, Ontario, firm the old-fashioned way. That is, he subscribed to dozens of industry magazines, paged tirelessly through piles of specialty catalogs and traveled to endless trade shows to find cheap and reliable manufacturers of everything from stationery to baby care products.

Because 90% of the goods Encore distributed came from the Pacific Rim, Bloomberg formerly ran up enormous fax and telephone expenses communicating with potential suppliers, as well as accumulating frequent flier miles conducting

factory site inspections and face-to-face negotiations with manufacturers.

But this was before Bloomberg joined World Merchandise Exchange (Womex) Online, a private "members-only" electronic information service in Norwalk, Conn., designed for the worldwide general merchandise trading community. Among other services, Womex maintains a database carrying tens of thousands of products from thousands of manufacturers; provides members with free electronic mail and online discussion forums; and offers links to industry publications, trade associations and other resources.

As a "buyer" member of Womex, Bloomberg logs on to the network, searches the database and finds detailed specifications, including photographs, packaging data, case markings, weight measurements and pricing estimates of potential products to distribute. He investigates the financial history of promising manufacturers, shoots off E-mail inquiries to interesting leads and

begins the active negotiation process with in-depth online discussions with potential trading partners. No more playing midnight telephone calls to non-English-speaking switchboards. No more faxing page after page of questions or requests for additional material to China, Korea or Taiwan hoping that timely and intelligible replies will be forthcoming.

Best of all, because of Women's ever growing list of members in the global merchandising world — many of them smaller manufacturers that don't advertise in international publications — "this has given us a much richer pool of potential suppliers to work with," Bloomberg said.

NOTHING COMES EASY

Such are the promises of global electronic commerce.

Life is good, according to Bloomberg and other international electronic commerce pioneers, who say the Internet and related technologies are paving the way for dramatically more effective and efficient business relationships that span formerly formidable geographic and cultural boundaries.

In July, Ira Magaziner, senior adviser to President Clinton on public policy, estimated that Internet commerce could account for 20% of global retail sales by 2007.

Still, many caution that this kind of rapid growth will not come easy. A recent report by Britain's Office of Economic Co-operation and Development, which surveyed 100 major users and providers of information networks in 13 countries, said electronic commerce will be the world's most critical economic issue in the 21st century. But it still calls such practices "a niche for a handful of businesses" because of myriad technical, regulatory, legal and cultural reasons.

There's a common view that global electronic commerce should be easy and cheap and "all you do is simply plug your PC into the Internet, and you'll have this terrific free way to interact with customers," said Peter Empringham, general manager at British Telecom Global Technology and Consultancy (BT/GTC), a division of BT in Lon-

don. Yet unless you commit a significant investment, "it simply isn't going to work."

Just ask experienced users such as Bloomberg. Although undeniably helpful, the World Wide Web does not yet offer complete soup-to-nuts solutions for transacting global business. More important, he said he doubts it ever will.

"Among other things, you would never, ever cut a final deal over E-mail," he said. "So we will always need to travel and visit and establish business relationships in more traditional ways."

"Although the Internet will ease some of the difficulties of global commerce, it won't eliminate the need for good business processes," said Shikhar Ghosh, chairman of electronic commerce software maker Open Market, Inc. "People who think they can replicate their entire business overseas using a piece of software are going to be disappointed. The Internet might not have trading boundaries. But packages do."

In short, the Web will not overcome customs red tape or local regulations regarding import or export of certain goods. And the Web cannot guarantee that goods will arrive in pristine condition, especially after being subject to all the hazards of international shipping and handling.

Which is probably why the amount of consumer-related international business conducted over the Web has been such a well-publicized disappointment.

Take the online store of specialty retailer The Sharper Image, considered one of the Web's biggest success stories. Although it racked up more than \$1 million in sales in 1996, this represented just 1% of total revenue for the San Francisco firm. "A drop in the bucket," admitted Josh Tretokof, manager of alternative media at The Sharper Image. Tretokof said he hopes to grow that percentage to between 10% and 25% of total revenue within five years. But it will take some doing, he said, because of the logistical challenges of serving overseas markets.

Currently, a full 25% of The Sharper Image's online business comes from overseas customers, "yet we're not really set up

to do a significant international business," Tretokof said. For starters, he doesn't have the systems — or the personnel — in place to calculate international shipping charges and estimate delivery dates for a high volume of foreign buyers. There's the language issue, of course, and "naturally, everyone wants to pay in a different currency," he said. "This aspect of our business is still in its infancy."

For now, Tretokof encourages overseas customers to shop at local affiliates of The Sharper Image. "Eventually, we'll figure it out," he said. "There's a big market over there."

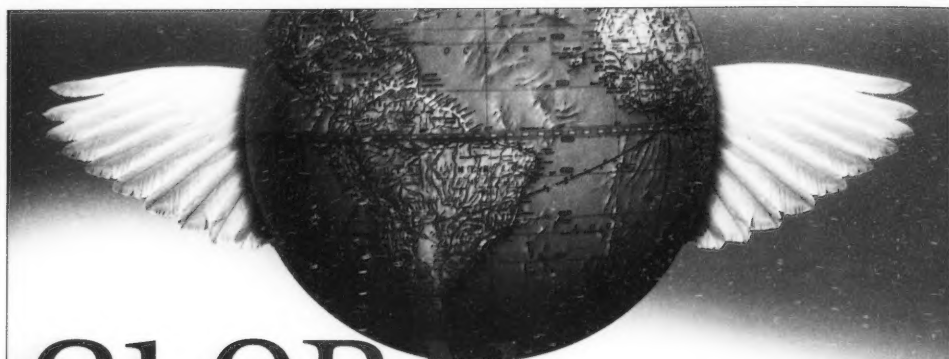
TAKING IT FOR GRANTED

And certainly technological challenges abound. Internet access is hardly universal. Although Hong Kong alone had more than 90 Internet service providers at last count, less developed countries in Central and South America or Africa have far fewer or none at all, forcing users to make international calls to get online. Countries impose substantive telecom tariffs for calls crossing international borders, although the World Trade Organization Telecom Services Agreement, ratified in February, promises to alleviate some of this taxation and open up more global telecom markets. Because the backbone of the Internet is in the U.S., response time for communications originating overseas can be dismal. Much of the commercial software designed to enable electronic commerce doesn't support multiple languages simultaneously, much less multiple currencies. Nor can it scale up to the number of users who would be using it on a global scale.

Vendors are scrambling to address these issues, and "it's getting better, but the public Internet and the Web are not yet reliable, robust or omnipresent enough to support real-world commerce," said Bruce Guptill, research director of electronic commerce and Internet strategies at Gartner Group, Inc. in Stamford, Conn. Ken Horner, partner in the consulting group of

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ILLUSTRATIONS BY LARRY GOODE



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Continued from page 7

Deloitte & Touche in New York, agreed: "The infrastructure is already stressed."

An increasing number of vendors offer electronic commerce applications and engines that promise a global scope, including Microsoft Corp., Netscape Communications Corp., Open Market, BroadVision, Inc., Connect, Inc. and Oracle Corp. Yet "none of them have scored brilliantly" in an exhaustive evaluation of the technologies completed by London-based Ovum Ltd. this summer, said Mark Stevens, an analyst at Ovum who co-authored the report. "Some of the products have the right idea, are definitely worth revisiting. But all are seeing huge financial losses since the market is still so embryonic," he said.

The main problems: lack of tools to support connection with distributed legacy systems across international subsidiaries; lack of scalability up to a global number of users; and lack of support tools to handle language and currency conversions. "A lot of them try to make it sound easy. They say, 'Buy our software, get online, sell your products worldwide.' That's rubbish," Stevens said.

YOU SAY BANANA . . .

Most of the challenges, however, are "softer." Does your firm have the resources to deal with customer or supplier inquiries from other time zones or deal with the frustrations of language barriers? What about the puzzling mass of existing trade, regulatory, tax and criminal laws that may or may not apply in cyberspace?

Many companies are realizing that one of the biggest costs of global electronic commerce involves integrating the Internet (or intranet or extranet) into the rest of their business practices. This is the same whether they're implementing Web business domestically or internationally. But "companies simply printing out E-mail messages and then dealing with them manually are losing much of the benefit," Guptill said.

Which is why Yukihiro Kayama, general manager of technology at the information systems and services group of Mitsubishi Corp. in Tokyo, believes the countries lagging in the information revolution might in fact come out ahead in the global electronic commerce arena — because of the lack of existing systems to retrofit.

Kayama is also a member of the board of directors of JapanNet, Japan's government-sponsored directive to develop a secure electronic commerce infrastructure for international trading. He has also participated in initiatives on cryptography, digital certificates and payment protocols. These are all key technical considerations, Kayama said, "but the biggest challenge facing Japanese companies who want to engage in electronic commerce is their conversion of legacy systems to connect to the Internet."

There's also the issue of scalability of existing applications. "Netscape's Merchant Server can certify only 10,000 users, but suddenly you are trying to manage electronic trading communities of 300,000 and more," said Alberto Ypez, CEO of En-Commerce, a Sunnyvale, Calif., software firm specializing in enterprise Internet-based software solutions. Even with internal applications, "very few products are enterprise-ready when that involves moving quickly from 20,000 users to a million users," Ypez said. "Most of these applications are primarily workgroup and departmental; trying to scale up to enterprise, particularly global enterprise, is going to take a lot of work."

"Fulfillment, inventory, accounting, accounts receivable: Every single aspect of doing business now must be linked through the Web sites. Which means Web server products need to be more complex, and the cost estimates go from a few tens of thousands of dollars to millions of dollars," Garner Group's Guptill said.

BT/GTC is working on a private extranet that would link it seamlessly to its major customers around the globe, including IBM, Siemens AG and Andersen Consulting. "We thought it would be a good way of managing accounts and would promote a rapid and free exchange of information," he said. But he's found out that "it's taking us a lot longer and much more money to get there than we expected."

The biggest issue: managing the content of the extranet. "We have to refresh it often enough to make it worthwhile to our customers." BT ended up outsourcing the job to a London firm specializing in Web content management.

And cultural issues abound. For example, in Germany, a vendor by law cannot

accept payment via credit card until two weeks after the order has been sent. And you can't display a swastika on a computer screen. "Yet if Amazon.com has books that use swastikas as artwork or within the text, who is legally responsible for breaking German law?" Stevens asked. And who pays taxes and customs duties? "Most systems aren't sophisticated enough to 'block' orders from specific regions or countries to avoid breaking the law by shipping forbidden products to a particular country."

There are also technical challenges arising from language differences. English is a 7-bit language, as evidenced by ASCII; most European languages are 8-bit languages, so ASCII cannot accommodate them. Not to mention Pacific Rim languages such as Japanese, Chinese and Korean, which means that processing data across language barriers is much more difficult than merely finding an adequate translator.

WHAT'S A COMPANY TO DO?

What are multinationals doing about this? Mostly taking things one step at a time, said George Chang, senior product marketing manager for the international platform at BroadVision, which currently derives more than 50% of its revenue from international markets. "We're seeing that even in large companies, such as Kodak, the first phase of deployment of a global electronic commerce system does *not* involve multilanguage support," Chang said, adding that the latest release of BroadVision software is available in five languages and can process data in five languages "since some companies are starting to look ahead."

The currency issue is even more complex. Most software from vendors such as Connect, Oracle and Open Market does not allow users to display more than one currency symbol and currency format. So merely to display a price in French francs for French customers or suppliers or in British pounds for English customers or suppliers is beyond the scope of most electronic commerce systems.

And that's just displaying prices. It doesn't even touch on the complexities of real-time currency conversions. Chang said on-the-spot conversion of prices from one currency to another will probably be the domain of a third-party service provider,

WORLD CONTESTANTS

...and Korea is viewed as the most "computer-savvy" on their PC prowess. But in the end, it's the speed, accuracy and cultural-political climate that will determine which new comers, companies are poised to enter or force entry into.

PERFORMERS

As measured in per capita, the U.S. and the major economies of the 1990s.

CONTENDERS

Government intervention points Japan to overtake Germany and the U.S.

● Germany, U.S., Japan, Canada

GATEWAYS

Singapore's bid to become an "intelligent island" will fail unless it abandons online censorship.

● Singapore, the Netherlands, Belgium, the former Hong Kong

SPRINTERS

Simple, innovative public policy is a strength across the board.

● Finland, Sweden, Denmark, Norway, New Zealand

STRAGGLERS

These potentially lucrative markets are in danger of being left behind.

● France, Australia, Italy, South Korea, Spain

WILD CARDS

Look to the mid-sized, middle-income per capita and growth of 1990s.

● Switzerland, Austria, Ireland, Israel, South Africa

LOW TECH

The coming year will determine which of these markets will move up and which will stay behind.

● Mexico, Malaysia, Greece, Brazil, Chile, Indonesia, Czech Republic, Portugal, Turkey, Argentina, Venezuela, Colombia, Poland, Thailand

RESISTERS

These countries are either too technologically underdeveloped or too politically isolated to become electronic commerce players in the foreseeable future.

● China, Saudi Arabia, India, Philippines, Russia, Pakistan, Iran



which would also be involved in closing the transaction between trading partners.

For now, The Sharper Image's Tretokof said, "We tell people to get out their credit cards and pay in dollars."

At U.S.-based Prodigy, Inc., the first online service recognized by the Chinese government, cultural differences include the fact that the Chinese are accustomed to paying cash in advance for business services. So Prodigy needed to adjust its billing and payment policies to reflect this comfort level.

"That was our single biggest impediment

the payment policy," said Paul DeLacey, president and CEO of Prodigy. He said cultural differences make it essential to establish local companies staffed with locals.

Big-selling online items in the U.S. — fresh flowers, for example — won't necessarily go over big in Africa or Mexico. Prodigy has learned that anything educational is turning out to be extremely popular: A 5,000-year history of China is one of Prodigy's most popular Chinese sites, and DeLacey expects stock market and brokerage services and gaming to "be really big."

His advice to other would-be global electronic businesses: "It can be extremely harmful to go in with the proverbial grand plan. You must maintain the attitude that you don't have all the answers."

KEEP ON TRUCKING

Users such as Encore's Bloomberg are looking forward to an increasingly wired world.

He's especially eager to see shipping companies establish online connections and have even more potential suppliers consolidated into a single electronic source. "I'm open to anything they want to offer," he said of electronic commerce vendors such as Womex. Yet despite the advantages electronic commerce systems offer, he said, most would-be global businesses still face many of the challenges that existed before.

In Bloomberg's case, he still must search for the best, most reliable, ethical and cost-effective sources of merchandise for Encore to distribute to its customers.

Indeed, "the global trading business hasn't changed in substance for centuries," said Glenn Reyer, vice president of global marketing for Womex. "Businesses must still find reliable and cheap suppliers. They must still establish strong relationships. And they must still negotiate favorable prices and delivery dates. We don't eliminate that. We just make the process more efficient."

Of course, there are logical extensions to the services Womex offers its members: electronic data interchange and logistics management, for example, as well as support for multimedia and video for global member communications. "But no electronic service will ever solve the problem of physical transport of goods, and no technology can eliminate language barriers," Reyer said.

Bloomberg agreed, pointing to the time and expense he now saves because faxing has been nearly replaced by E-mail communications. Yet he still goes to trade shows, still peruses magazines and catalogs.

"This is another tool — an addition, not a substitution for the way we already did things," he said. "I don't believe that electronic commerce will ever completely automate the trade cycle. Not in my business."

LAPLANTE IS A FREELANCE WRITER BASED IN WOODSIDE, CALIF. SHE CAN BE REACHED AT ALAPLANTE@AOL.COM.

WORLD CONTESTANTS

Forrester Research ranked 45 of the world's largest economies on their EC prowess based on market size, technology penetration and cultural/political climate. Here are the results. (In each category, companies are listed in order of their ranking.)

SUPERPOWERS

To maintain its position, the U.S. must drop crypto restrictions.

- U.S.

CONTENDERS

Government initiatives position Japan to overtake Germany and the UK.

- Germany, UK, Japan, Canada

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Look to the wild-card countries for the gateways and sprinters of 1999.

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Big-selling online items in the U.S. — fresh flowers, for example — won't necessarily go over big in Africa or Mexico. Prodigy has learned that anything educational is turning out to be extremely popular: A 5,000-year history of China is one of Prodigy's most popular Chinese sites, and DeLacey expects stock market and brokerage services and gaming to "be really big."



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UK: THE INTERNET BOOKSHOP LTD.

BOOKSHOP HITS WEB WALLS

**DESPITE INTERNATIONAL
SUCCESS, BOOKSTORE
FOUNDER SEES ROAD-
BLOCKS FOR NON-U.S.
WEB-BASED COMPANIES
BY KRISTI ESSICK**

For overseas businesses, the idea of setting up an electronic commerce Web site is alluring. An online presence can introduce your products to the largest group of Internet users in the world, North Americans, as well as attract customers around the globe.

However, non-U.S. companies face significant roadblocks to developing a Web presence. At least, that's the view at the Internet Bookshop Ltd. in Cambridge, England (www.bookshop.co.uk).

The UK-based online bookstore offers the second-largest number of in-print titles (859,000) on the 'net. Its prices are competitive, and its sales have risen dramatically since opening for business three years ago. But revenue lags far behind that of its fiercest competitor, Amazon.com, which did 30 times its sales in 1996.

One of Amazon.com's main competitive advantages is that U.S. users are much more prone than Europeans to use the Internet to purchase goods, and they often go to Amazon.com first, said Darryl Mattocks, Internet Bookshop founder and managing director.

"At the end of the day, there will be domestic loyalty," Mattocks said.

More than 40% of the Internet Bookshop's sales do actually come from U.S. customers. But Amazon.com has wider recogni-

tion and doesn't make U.S.-based customers pay for international shipping or buy products in pounds sterling, Mattocks said.

Overall, the Internet Bookshop is an international success story. In less than three years, the 25-employee company has garnered nearly 80% of its sales from outside the UK, whereas only about one-third of Amazon.com's sales are international.

The site is based on Compaq Computer Corp. servers running Microsoft Corp.'s Windows NT 4.0 and a Microsoft SQL Server database. Its access provider is PSINet.

Some of its biggest international markets are Scandinavia, Australia, New Zealand and Germany, mainly because customers in these regions are interested in buying English-language books, Mattocks said. He is currently building up a database of German and Italian titles and locating mirror sites

**Eighty percent
of the SHOP'S
sales are made
OUTSIDE the UK.**

in Germany and Italy, but the process is long and expensive. In addition, the company must translate the entire site and hire customer support staffers for each language.

On top of the language issue, the Internet Bookshop has to find ways to ship products internationally quickly and cheaply and offer prices that are low enough to offset the shipping price, Mattocks said.

Also, the Internet Bookshop has had to build an in-house software system that determines international taxes with Microsoft BackOffice components. Buyers pay for the books in pounds sterling on their credit cards but are billed in their local currencies on their statements — often at very favorable exchange rates, Mattocks said.

"Another prime problem is the establishment of brand," Mattocks said. To become well known requires the company to sink large sums of money into Internet advertising, he said.

LOOKING BACK

If Mattocks could do it all over again, he would have located his business in the U.S., despite the fact that his product is sold strictly online. Not only is the customer base much larger in the U.S., but getting funding from venture capitalists is also "much, much easier than in the UK," Mattocks said. In addition, the cost of leasing telecommunications lines and buying computer systems is much higher in the UK, he said.

Upgrading the technical infrastructure, marketing and advertising have cost the Internet Bookshop huge sums of money, Mattocks said. The company posted a loss of 169,800 pounds (US\$278,472) for the year ending Dec. 31, 1996, but sales are increasing. In the first three months of 1997, it received 23,000 orders — more than in 1996 and a 59% increase over the last three quarters of 1996, Mattocks said.

"Ideally, the Internet provides the communication highway across the continents, but then you face all the problems that a regular business does," he said.

ESSICK IS A CORRESPONDENT AT THE IDG NEWS SERVICE IN THE LONDON BUREAU.



INTERNET BOOKSHOP FOUNDER DARRYL MATTOCKS

PHOTOGRAPH BY JUSTIN LEIGHTON

FRANCE: TRAITEMENT COOPERATIF & INTEGRATION DE SYSTEME

FROM 0 TO 50% IN ONE YEAR

FRENCH SOFTWARE
MAKER ATTRIBUTES
HALF ITS REVENUE TO
INTERNATIONAL SALES —
THANKS TO THE WEB
BY JEANETTE BORZO

When Serge Charbit had trouble with a personal organizer he bought recently from a foreign company, he found answers to his support questions immediately on the World Wide Web. Ironically, he's been unable to get adequate support for a product he purchased from a software company located 10km from his home in Paris. "I've called them" with support questions, Charbit said. "But it's been two months now, and I still haven't heard from them."

When it comes to high-tech products, he much prefers to buy on the Web than go to the local store, and Charbit is a man who practices what he preaches. As president and chief executive officer at Traitement Cooperatif & Integration de Systeme (TCIS), a 6-year-old French company with a variety of applications for users of IBM's AS/400 minicomputers, Charbit had no business outside of France until last year. Today, "grâce à la Web," Charbit expects to attribute half his company's revenue to international sales in the U.S., New Zealand, Australia, Sweden and Indonesia.

Simply by translating software products and their accompanying manuals from French into English and placing them on the Web for demonstration purposes, Charbit expanded beyond his domestic market and increased sales by 10% last year. This year, he expects revenue to surge to 12 million to 16 million francs, from 8 million francs (US\$1.04 million) last year.

"There is one thing for sure: Without the

Internet, TCIS would never have had the visibility it has today," Charbit said.

Based on previous experience with France's Minitel system (a national information utility accessible from dumb terminals), TCIS learned how to ease the sales process by enabling customers to place orders via a central product database.

So early in 1996, TCIS put a demo version of one of its products, ClientObjects/400, on the Web and opened its site in both French and English. The system is based on Microsoft Corp.'s Internet Information Server. The software offered users a 30-day free trial. Those who liked it could pay for the software and obtain a key to unlock the product's full capabilities.

Soon after, a marketing manager at Borland International, Inc. "discovered" the application, which works with Borland's Delphi rapid application development tool.

That Web-based discovery led to a lucrative bundling deal. "I didn't know anyone at Borland, but thanks to the Web, Borland saw us," Charbit explained.

TCIS planned to launch several products (one called Update Objects/400) this fall on a redesigned Web site. The Web-based growth has led to one or two growing pains. For instance, TCIS's internal resources weren't sufficient to redesign and launch a new look, so the company was waiting this summer for its outside contractor to finish with the Web site redesign.

TCIS's products can be ordered on the Web site and paid for with either a credit card, confidential card information sent in an electronic message or a check. Charbit uses no special security system but switched to a New York bank for all payments when the concept of credit-card payments over the Web befuddled his French-based bank.

Today, Charbit considers the Internet to be a more invaluable business tool than the phone, citing the occasional ineffec-

tiveness and European expense of the phone.

He has even found that the newness of the Web can yield unexpected advantages. For example, Charbit wanted to know what to do about

customs charges for overseas customers. "We have no context in which to charge you," is what customs officials told him, Charbit said. "They never called me back," he added with a smile.

Still, Charbit knows the new medium has its pitfalls. "The biggest challenge is to let your potential clients know about the product," he said. "And it's more complicated to explain how to buy something on the Web than if you would open a store and start offering products."

BORZO IS THE IDG NEWS SERVICE BUREAU CHIEF IN PARIS.



TCIS'S SERGE
CHARBIT

Charbit considers
the INTERNET to
be an even more
VALUABLE tool
than the phone.

PHOTOGRAPH BY BENOIT DECOIT

U.S.: X-RADIO CORP.

THE NOTE HEARD 'ROUND THE WORLD



**THIS ALTERNATIVE MUSIC
SITE, WHICH SELLS CDS
ON THE WEB, IS GROWING
ITS BUSINESSES AT A
RATE OF 100% PER MONTH
BY NIAL MCKAY**

Eighteen months ago, Wilton Risenhoover and Stephen McGarrigle started to digitize their favorite techno, ambient and trip hop music CDs and play them on their World Wide Web site, www.x-radio.com.

At that time, trip hop and techno were only beginning to take root in London and Paris, and CDs were not readily available in major U.S. record stores.

The idea was to have an alternative music radio station on the Web. But after six months, a listener called asking for six techno CDs of Risenhoover's choice.

"That is when we got the idea to start selling CDs on the Web," said Risenhoover, chief executive officer of the San Francisco-based

x-radio Corp. "Until then it was just a hobby, but following that we began to see the potential of x-radio."

Risenhoover built a digital juke box, selected six CDs, digitized them and put them behind one RealAudio button, thus setting up a Web-based business.

In the last two months, x-radio has built a merchant server and is now taking credit-card orders over the Internet, using VeriSign, Inc. certification.

Today, 80% of x-radio's business comes from overseas from places as far afield as South Africa, Saudi Arabia, Costa Rica, Latvia, Australia and Sweden.

X-radio is growing its businesses at a rate of 100% per month and is just one of the many new music sites springing up on the Web. Some, such as CDnow, have built warehouses on the 'net. But where x-radio

and CDnow differ is that CDnow asks customers for an artist's name or a title.

"We believe that is the wrong model," said Stephen McGarrigle, vice president of operations for x-radio. "While CDnow will probably do very well, for the smaller operators like ourselves, we will have to use all the advantages of a new medium to get our customers' attention."

That's why x-radio bills itself as a radio station, Webcasting concerts, giving online reviews and planning to add disc jockeys to its broadcasts for a couple hours a day.

Stores such as Tower Records or Virgin Records are just beginning to come to grips with selling CDs over the Web. "I think the record companies are terrified of the Web and have been very slow to get involved," said Cynthia Brumfield, an entertainment analyst at Carmel, Calif.-based consultancy Paul Kagan and Associates. "It's a market waiting to happen, but nobody has quite figured out what the business model is yet. The volumes are not yet there to justify the record companies' involvement."

This is helping some of the smaller, more innovative services, such as those found at sonicnet.com, www.musicnet.com and adict.com, get up and running.

No doubt lack of immediate financial reward is what has stopped record companies from getting involved, but New York-based new media consultancy Jupiter Communications says by 2002, online sales of prerecorded music will total \$1.6 billion, or 7.5% of the overall music market.

McGarrigle said this figure seems naive. "What the Internet is doing is reversing the trend of the super band being forced upon the record buyers by the likes of MTV and the record companies. It's not a brave new world, but it's hurting record companies because they're losing control of the industry."

**By 2002, online sales
of PRERECORDED
music will be 7.5%
of the MUSIC market.**

PHOTOGRAPH BY JOHN HARDING



X-RADIO'S STEPHEN MCGARRIGLE AND WILTON RISENHOOVER

MCKAY IS A FORMER IDG NEWS SERVICE CORRESPONDENT, NOW AT INFOWORLD.

JAPAN: ITOCHU CORP.

SOWING SEEDS FOR 'NET USE

**JAPANESE COMPANY
BUILDS TEXTILE SITE
THAT MIRRORS GLOBAL
PARTNERS' AND TRADERS'
REAL-WORLD DEALINGS**
BY ROB GUTH

Japan's Itochu Corp. is planting the seeds of its future in the swank Tokyo district of Minami Aoyama.

Across Route 246, in stark contrast to Itochu's towering headquarters, is Itochu Internet Corp. (IIC), a single-room, 10-person subsidiary that is exploring how its US\$150 billion trading parent can exploit the global network of networks.

While Itochu is involved in many Internet-related ventures, including participating in an Australian cybermall, its IIC unit is charged with melding Itochu's diverse real-world business with the Web, said Yasuo Awamoto, senior manager at IIC.

"Our mission . . . is to find ways to use the Internet to make existing businesses within Itochu more efficient and profitable," he said.

The 140-year-old giant has built its fortune as a behind-the-scenes dealmaker for businesses spanning satellite communications, lumber and yarn. As with all of Japan's "sogo shosha," or general trading companies, Itochu is the quintessential middleman—the very player whose role could be threatened by the emerging "one-to-one" world of Internet commerce.

The shosha, whose ranks include Itochu, Mitsubishi Corp. and Marubeni Corp., have traditionally drawn their strength from their massive global networks of people that provide deep knowledge of local cultures, languages, laws and business practices. Itochu, for instance, has more than 7,000 employ-

ees spread throughout 220 offices worldwide.

But as Japan's multinationals in recent years have strengthened their own global contacts, some argue that the shosha are not as critical as they once were. "The value-add of simply having people who are familiar with a culture and the system is no longer a strength," said Atsushi Abe, former manager of a leading Japanese trading company and now managing director of the Tokyo office of Alex. Brown & Sons.

Enter Awamoto, who with his colleagues at IIC is creating several Web-based marketplaces that mirror Itochu's existing businesses. The first of these is Tex-Mart (www.tex.market.co.jp), a marketplace for textiles.

The site mirrors Itochu's real-world textile business, in which the company oversees the buying and selling of tens of thousands of textiles among hundreds of partners around the world.

Opened in April, Tex-Mart enables textile buyers equipped with a browser to search for fabrics by inputting characteristics of what they need. Buyers can tap the Tex-Mart Web site and enter their desired fabric's composition, in addition to other criteria such as whether the fabric should be woven or knitted, whether it should be waterproof and whether they can specify a particular mill from which to purchase the material. The site then displays in full color suppliers' fabrics that might meet the buyer's needs.

The site is powered by Sun Microsystems, Inc. servers running Sybase, Inc.'s System 10 and Netscape Communications Corp.'s Commerce Server.

The mart handles fabric purchases with a debit system. Participants in Tex-Mart leave a small amount of money with the

mart, which Itochu debits for purchases.

With just 100 members in seven countries, including Japan, Korea, the U.S. and Italy, Tex-Mart is admittedly a modest endeavor. With 100 million yen (US\$900,000) in revenue expected the first year, Tex-Mart will have little immediate impact on Itochu's \$18 billion textile business.

Speed is one advantage. With Tex-Mart, delivery times are cut to days from what could take weeks under the current fax and telex system, Awamoto said. And textile buyers can easily track purchases.

Most important, Awamoto said, is the data analysis the online market offers. With an analysis portion of Tex-Mart, users can produce graphs and charts that show historical trends in textile buying.

GUTH IS AN IDG NEWS SERVICE CORRESPONDENT IN TOKYO.



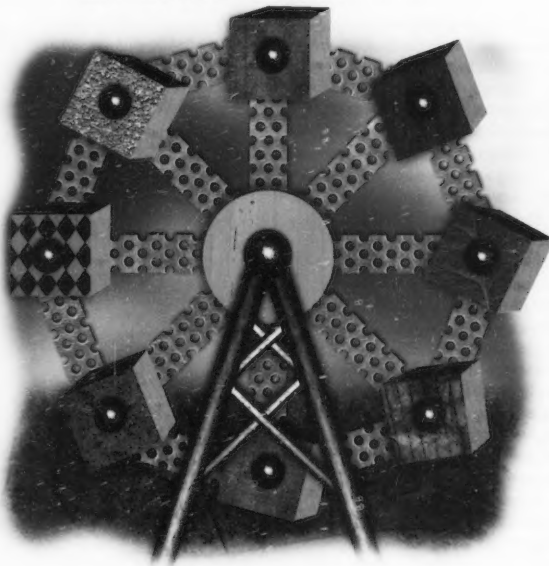
ITOCHU'S YASUO AWAMOTO

Itochu is the
QUINTESSENTIAL
middleman,
whose **ROLE** can
be threatened by
the **WORLD** of
'net commerce.

PHOTOGRAPH BY TOM WAGNER

THERE'S MORE TO TAKING YOUR WEB SITE GLOBAL THAN TRANSLATION — FACTOR IN LOCAL LINGO AND FLAVOR

BY SARI KALIN



THE IMPORTANCE OF BEING MULTICULTURALLY

WHEN IN ROME, DO AS THE ROMANS DO. But when on the Internet, where a Web site can reach an audience from Rome, Italy, to Rome, N.Y., how does a company know which language to speak, let alone how to blend in with the locals?

For most Fortune 500 companies' early Web efforts, English was the language — and American the culture — of choice, given that the bulk of Web surfers resided in the U.S. As Internet use starts to take off from Paris, Texas, to Paris, France, however, some U.S.-based multinationals are starting to appreciate the "world" in the World Wide Web.

As of August, for instance, Sony Music Entertainment, Inc. boasted 13 country-specific Web sites, so French fans can see which Sony artists are "en tournée" in Nice, and German fans can see which Sony records topped the local album charts "diese woche." United Parcel Service, Inc. had similarly expanded its Web-based tracking service so customers from 13 European countries could check — in their local language — whether their packages had reached their destinations around the world.

One factor prodding these and other companies is the expected growth in Web usage outside the U.S. According to Jupiter Communications, the percentage of non-U.S. households with online access will grow from roughly 32% last year to 46% by 2000.

But such numbers are not enough information to make a globalization decision. Several companies interviewed said that before deciding to translate parts of their main corporate site or develop country-specific satellite sites, they tracked the locales of vis-

itors to their main site and matched those against the geographic breakdown of their customer base. Most companies' first multilingual efforts came a year or more after launching their initial site.

"Don't just make your site multicultural because that is what the latest trend is," said Marvin Chow, interactive marketing manager at Reebok International Ltd., with headquarters in Stoughton, Mass. Reebok launched region-specific sites in Korea, Japan, the UK and Hong Kong after studying its market and Web traffic.

Companies such as Reebok that have made the leap see their multilingual Web presence as a natural extension to their global sales and marketing strategies.

"We publish a lot of our other materials in the local language," said Gareth Thomas, marketing manager at UPS Europe. "Why should we limit ease of use and access on the Internet when we don't in the other mediums?"

LEARNING THE LOCAL LINGO

Once a company has decided to go global, Web and marketing personnel should be prepared: It's not as simple as translating every word on a page.

To be sure, linguistic and graphical details are as important on the Web as in any translation project, experts say, especially as other languages and cultures have developed their own Web lingo and iconography that differ from that in the U.S. The English term "home page" is translated as "pagina inicial," or first page, in Spanish and "page d'accueil," or welcome page, in French. And icons that a novice American Web surfer would easily recognize, such as an American-style mailbox, may not speak as clearly to an overseas user. "Its color and shape do not immediately convey for Europeans the notion of sending mail," said Yuri Radziewsky, president and chief executive officer of YAR Communications, Inc. in New York, a multicultural communications agency that is localizing Digital Equip-

BEFORE YOU GLOBALIZE YOUR SITE

- WILL YOU HAVE to develop a new navigational logic to accommodate cultural preferences?
- WHAT CONTENT will you translate, and what content will you create from scratch to address regional competitors or products that differ from those in the U.S.?
- SHOULD YOUR multilingual effort be an adjunct to your main site, or will you make it a separate site, perhaps with a country-specific domain name?
- WHAT KINDS OF traditional and new media advertising will you have to do in each country to draw traffic to your site?
- WILL YOUR SITE get so many hits that you'll need to set up a server in a local country?
- WHAT ARE THE legal ramifications of having your Web site targeted at a particular country, such as laws on competitive behavior, treatment of children or privacy?

SOURCE: GARTNER GROUP, INC.

ment Corp.'s AltaVista Internet Software, Inc. corporate site. "A more universal icon would be an envelope."

Beyond fine-tuning the language, companies must consider a host of other issues that could add costs or complexity to a multicultural Web effort, according to John Hearn, a research analyst in interactive marketing at Gartner Group, Inc. in Stamford, Conn. (see box above).

Companies that have embarked on the Web globalization process advise their peers to set up a global strategy. That way they can avoid sites that don't measure up to corporate quality standards.

"Even within a global Web strategy, companies seek varying degrees of centralized control over technology and content. At UPS, for example, all domestic and foreign

Web pages are hosted at the company's data centers in Mahwah, N.J., and near the corporate headquarters in Atlanta because that's where a dozen mainframes track shipments worldwide, UPS's Thomas said. But Sony Music has taken a more decentralized approach, said Mark Wachen, director of new technology and business development at Sony Music in New York. Many Sony business units have made their own Web hosting arrangements, as much of the decision to develop a Web presence is made in the region. Even so, Sony Music is looking to share resources where it makes sense.

DIFFERENT TASTES

In terms of content, companies often strive to balance the need for a consistent brand and look around the world with the need to appeal to local tastes. McDonald's Corp., for example, has developed guidelines to ensure that each country delivers a consistent rendering of the corporate philosophy. But "that is not to say that every single page of every single country is going to look like the Web site developed back in the U.S.," said Judy Newby, project manager and Webmaster at McDonald's in Oakbrook, Ill. McDonald's main site, for example, uses primary colors and greets visitors with the golden arches and gold text against a Ronald McDonald-red background. The Japanese site, however, uses pinks and browns to complement the McDonald's red and gold. "The color scheme is very different from ours, but that's because it's made for the Japanese [market]," Newby said.

The most important advice companies offer: Start working early with the overseas troops on your Web strategy, and communicate often so everyone is on the same page.

"It's very difficult with a global company, just communicating, with the different time zones and everything else," Newby said, noting McDonald's put together a booklet before launching its Web site last year to let its foreign operations know what to do to participate on the Web. "If you start early and you build a rapport with people . . . it's a lot easier to get things done."

KALIN IS AN IDG NEWS SERVICE CORRESPONDENT IN THE BOSTON BUREAU.

ILLUSTRATION BY LARRY GOODE

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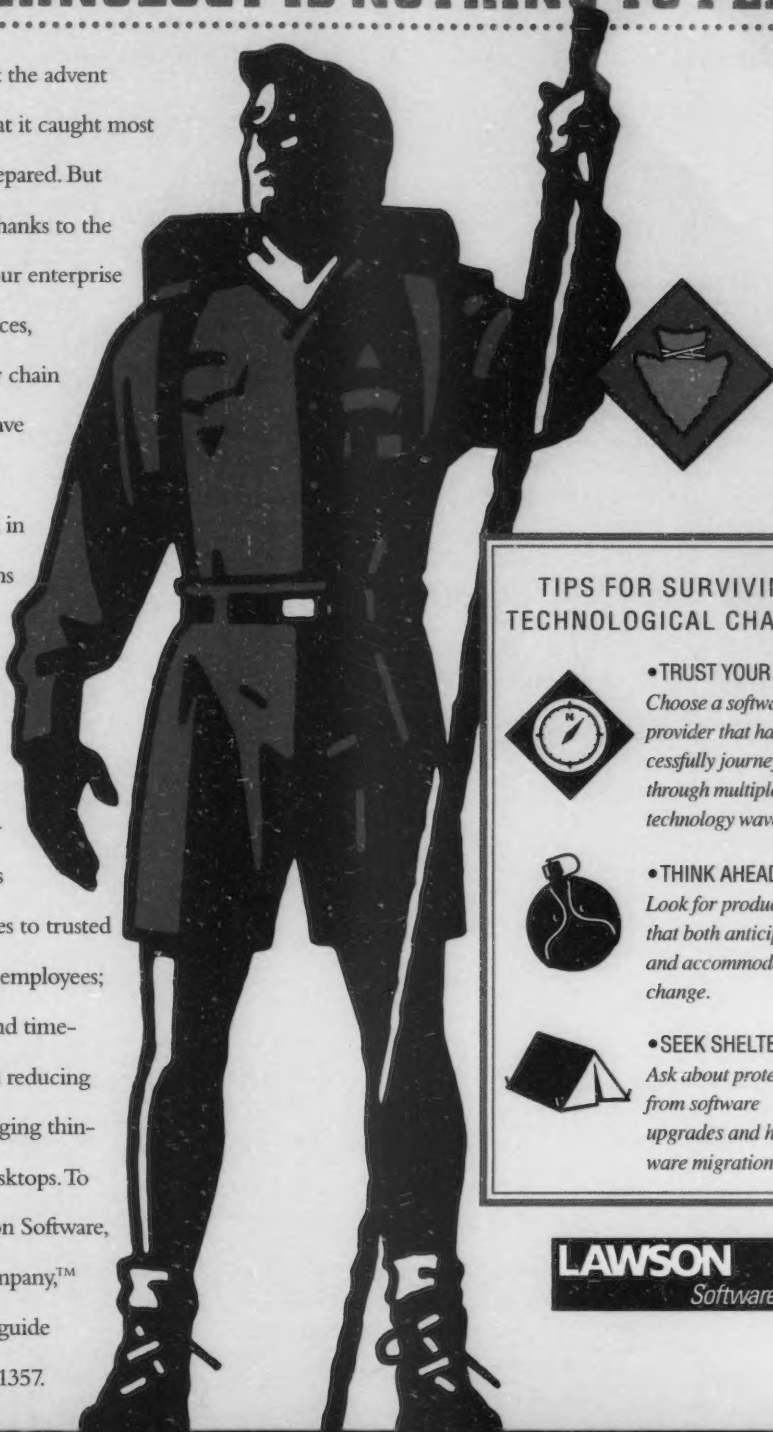
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O P I N I O N

Network clutches Considering what a surly, ungrateful bunch we users are, the dogged

dedication of the people who keep our networks running every day is a thing of wonder.

You just can't help thinking that while reading Pat Dryden's page 1 story on the personal strain and pain of keeping networks up 7x24x365.

How often do we stop to thank the people who put the health of their company networks ahead of everything else? They include women like the Sprint network supervisor who had to walk away from a slot machine winning streak when an insistent pager called her to

duty. And men like the tech services manager who had to abandon his family at Disney World for several hours during a network crisis. What did those disappointed kids learn to sing — "It's a Continuous-Uptime World After All"?



Ironically, the more sophisticated network technology becomes, the more tightly it grasps IS professionals in its clutches on a round-the-clock basis.

At the Network/Interop trade show this week in Atlanta, net managers will see plenty of new products designed to provide even more ability to manage these monsters remotely. But that doesn't mean less work. It means more ways to monitor devices that will keep them awake late at night — or ring their cell phones in a movie theater.

Many of our IS help desk and support personnel also live the harried lives of rescue workers. One evening not long ago, I spent 40 minutes on the phone with Tom Lamoureux, our director of support services. He patiently talked me through the last tedious steps of a remote Lotus Notes installation — all the while hunkered down in his car in some parking lot, missing part of his son's hockey game.

So the next time your network hiccups and you feel a full-blown user snit coming on, keep in mind what these folks do for us all. And thanks again, Tom.

Maryfran Johnson

Maryfran Johnson, Executive editor
Internet: maryfran_johnson@cw.com



L E T T E R S

What's so bad about using E-mail to conduct business?

WHY ARE IS departments "dismayed" that corporate employees used internal E-mail and the Internet to conduct serious business during a time of crisis ["Siren call of Internet mail: UPS strike boosts E-mail traffic," CW, Aug. 25]? Are they dismayed that conscientious employees were not sending around joke messages? Are they dismayed because continued use of their employer's multi-million-dollar investment in communications equipment will be used for business communications instead of continuous downloading of software to the new network computers?

According to the article, security is the cause of their dismay. But that's only a smoke screen. Businesses commonly use their fax machines to transmit requests, proposals and even contracts. With the speed-dialing features of current fax machines, these sensitive documents are frequently sent to the wrong machine.

Obviously there is more to the story. Are IS departments actually dismayed, or are they elated? Maybe the problem exists only in the minds of *Computerworld's* writers and editors.

David Miller
Richmond, Va.
dheymiller@erols.com

Egghead spam unappetizing

YOUR ARTICLES on spam are right on target. I've been attempting to have my name removed from an Egghead Computer mailing list for three months, with no success. Despite using all three methods identified

by Egghead to have my name removed, they can't "make it so."

With only two ways of sending E-mail to my corporate account, Egghead claims they can't figure out how I'm receiving their advertisements. We'll see if my company's legal department can handle this.

What's needed is a law similar to the Telecommunications Act that requires a solicitor to drop your name immediately if you tell it to. Spammers will take notice if the law is enforced with some highly publicized and expensive lawsuits.

Terry Tubridy
Honolulu

SAP's already gone to school

THE ARTICLE in the Aug. 11 issue about SAP R/3 being integrated into the business school curricula at five universities ["SAP AG enters college," CW] was interesting. However, as a professor at one of those universities, I feel you missed the bigger story. We have been using SAP R/3 in the classroom for more than a year now. We are currently using Version 3.0D+ but will be upgrading to Version 3.1 shortly. We have integrated SAP R/3 into nine business courses. Several of these courses are being offered for the third semester using SAP R/3.

So if you want a story about what a college has done instead of what it is planning to do, come talk with us.

Ray Boykin
California State University
Chico, Calif.
rboykin@busipo.csuchico.edu

No magic bullet here

IF I WAS QUOTED correctly by Patrick Dryden in his article on response time measurement ["IS managers seek diagnostics for app health," CW, Sept. 1], then I am at least guilty of sloppy speech.

What I should have said (and thought I had) was that code that is sufficiently modular can be instrumented by wrapping Application Response Measurement (ARM) calls around existing transactions.

Most code in use today was written prior to any standardized method being available in the distributed environment for internal measurement of performance. It is therefore unlikely that software engineers have designed their applications with this instrumentation in mind. Many applications will have to be modified in order to allow for response time instrumentation.

ARM could be a powerful aid in tracking application performance, but it is not magical.

Richard Weiss
Enterprise Management Systems
Charles Schwab & Co.
San Francisco
Richard.Weiss@Schwab.com

Computerworld welcomes comments from its readers. Letters shouldn't exceed 200 words and should be addressed to Maryfran Johnson, Executive Editor, Computerworld, PO Box 9171, 500 Old Connecticut Path, Framingham, Mass. 01701. Fax number: (508) 875-8931; Internet: letters@cw.com. Please include an address and phone number for verification.

Getting off the customer relationship sandbar

Patricia B. Seybold

In the past six months, I've met a lot of people who are caught in the same dilemma: They want to get moving on IT initiatives that will make it easier for their customers to do business with them. But they're in organizational paralysis.

IT executives are waiting for the businesspeople to loosen up the purse strings. Business executives are stymied by the apparent complexity of projects that consolidate all customer data and streamline cross-departmental business processes.

CEOs want more "customer intimacy" to increase customer loyalty and increase revenue. Line-of-business executives translate that into operational goals such as "integrated customer care" or "a holistic view of customers." IT executives drill down and talk about the need for data warehouses, middleware to integrate applications across business processes and integrated customer contact frameworks that would



Why aren't more companies moving to deliver streamlined, customer-facing systems?

centralize customer contact information whether the contact was by fax, E-mail or face-to-face meetings.

So, if all those parties agree, why aren't more companies moving forward aggressively to deliver streamlined, customer-facing systems? Because no one is willing to step up to the bar. The CEOs are committed, but no one has brought them a game plan on which they can sign off. They're waiting for specific initiatives with measurable results. The

line-of-business executives are stymied because each has a limited purview. They can fund only those projects that impact their product line or their department.

That leaves IT managers stuck without funding for information integration work that is, by its very nature, cross-divisional and cross-departmental.

Their budgets and resources already have been allocated to large-scale, multiyear SAP implementations or other large projects designed to streamline internal operations.

To make matters worse, many companies have competing Internet and World Wide Web initiatives. Each is sponsored by a group that feels it should have the ultimate control over the company's Web presence. The result is often a fragmented set of faces to the customer. Does that picture look familiar? If you're stuck trying to get off this customer relationship sandbar, it may help to know that you have plenty of company. But don't lose heart.

There are two scenarios that seem to work. The most efficient is for a visionary corporate marketing or sales vice president to seize the initiative and begin to move forward aggressively. That person needs to be able to bring together

the sales, marketing, customer service, operations, finance, product planning, manufacturing and order-fulfillment departments across all lines of business and seduce them into cooperating on the design of a single, coherent customer information infrastructure. He also has to have deep pockets and the willingness to spend what it takes.

The second, and more tortuous, path is for a group of business executives to band together for the common good of the company and its customers, pool their resources and agree on priorities and funding. The IT planners need to be part of that coalition, so they can help direct funding to the infrastructure investments that will have the greatest leverage. The coalition approach takes longer but may result in equally impressive results.

In both cases, of course, there have to be small victories en route — victories that will delight certain groups of customers and yield measurable results. They will build momentum and enthusiasm. But whichever approach you take, you'd better start now. Your competitors have your customers in their sights. □

Seybold is president of Patricia Seybold Group in Boston. Her Internet address is psbold@psgroup.com.

Rocketing IS salaries: The party's over

Michael Schrage

A C+ (not C++) computer science graduate straight out of the University of Cincinnati gets a \$36,000 per year starting salary. Not quite top-tier year 2000 and SAP consultants snag up to \$2,000 per day. I personally know a half-dozen Fortune 1,000 webmasters not yet 29 years old who make more than \$100,000 per year.

This can't go on.

Don't get me wrong. I'm not complaining about IS compensation. Frankly, I believe IS talent has been undervalued and underpaid more often than not. The recent spikes and surges in IS salaries — far more than the net worth rise of a Gates, Ellison or Andreessen — best represents the revenge of the nerds. Software in the '90s has become a bit like Major League Baseball free agency. Even known mediocrities can command outrageous premiums in the marketplace.

But perennial double-digit growth in IS salaries must provoke market responses. Companies aren't comfortable creating a new economic elite within

their workforce. It's one thing for a salesperson on commission — a real revenue producer — to make more than the CFO. But a software jockey who's a wizard with Smalltalk? The guy who can flawlessly phase in a systems upgrade in less than 30 days instead of three months?

We can argue endlessly over relative values. But does anyone doubt that one reason many excellent programmers have left cushy Fortune 100 posts or jobs with Andersen Consulting is that they can easily double their gross incomes while retaining greater control of their time? Indeed, hundreds of companies are sick to discover that they're pay-

ing \$100,000 in part-time consulting fees to programmers they had once wage-slaved for \$60,000 per year plus benefits.

So we will see new initiatives to crack the spine of this software wage inflation. You can be sure that we'll see an entrepreneur or 20 set up Internet-enabled remote diagnostics and maintenance sites in Bangalore and Budapest at prices that will put further pressure on the CSCs, Andersens and EDSs. Clearly, venture capitalists will put money in companies that promise to dramatically cut the human costs of IT systems. Do you think top managers will buy a system that is 40% less flexible in exchange for one that cuts life cycle costs by 60%? I do.

Let's face it: Most legacy systems — and today's Internet — were built with the idea of smart but



Companies aren't comfortable creating a new economic elite.

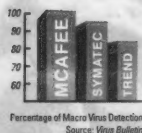
cheap intellectual labor in mind. Indeed, you could argue — and I will — that we would never have witnessed the evolution of enterprise computing if programmers in 1967, 1977 and 1987 had been paid wages comparable to today's.

We've seen paralegals and paramedics become part of the human capital effort to manage legal and medical costs. We will inevitably see IT systems designed to enable a new class of "para-softs" capable of absorbing much of the time, costs and skills associated with software systems management.

Are you unhappy with managed care and the way doctors treat you at HMOs? Well, welcome to the brave new world of "managed software" where the incentives are similarly skewed to provide "the best" development and maintenance for "the best" price. Will this make corporations more computationally competitive? Probably not, but it will slow the rise of the median MIS wage. That's the idea. □

Schrage is a research associate at the MIT Media Lab and author of *No More Teams!* His Internet address is schrage@media.mit.edu.

Go explain to the CEO why you thought 94% virus defense was good enough.



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Banks join online net

Citibank and First Union Corp. have joined the Integriion Financial Network, an online bank consortium led by IBM and 17 financial institutions. Integriion's Interactive Financial Services lets people conduct PC-based banking or buy products over the Internet. Integriion officials said the addition of New York-based Citibank and Charlotte, N.C.-based First Union means 75% of households in North America with bank accounts will be able to use the service.

DHL to track parcels

Shipping firm DHL International Ltd. has teamed up with AT&T Corp. to offer a new package notification service. The Electronic Shipment Advisory service will let package senders tie an electronic-mail or fax message to each parcel to inform recipients exactly what is on its way. Customers can get package updates from the system via the World Wide Web by using an airbill shipping number. The messages will be sent over AT&T's global network.

Integrator acquired

Computer Data Systems, Inc. in Rockville, Md., a major systems integrator for federal agencies, has been acquired by data processing vendor Affiliated Computer Services, Inc. in Dallas in a transaction valued at \$373 million.

The pace of outsourcing

Analysis of whether to outsource: 1 month

Issue requests for information, get responses: 1.5 months

Issue requests for proposal, get responses: 3 months

Choose finalist: 1 month

Negotiate contract: 1 month

Based on consulting firms' experience in outsourcing deals.

Source: King Information Group, Inc., Peachtree City, Ga.

Sharing GIS talent with world

"The goal is to have 40 to 45 people working on different projects by the end of May."

— Hollis Owen, Harding Lawson

By John King

FOR THE past decade, Harding Lawson Associates, Inc. has used geographic information systems (GIS) technology to help government agencies do everything from track air pollution patterns to document cleanup activities at Superfund sites.

Now the \$12.6 billion environmental engineering consulting firm in Novato, Calif., is capitalizing on its GIS expertise to launch a business that designs and implements customized decision-support systems for a broad range of government and commercial clients.

Seattle-based Westin Hotels & Resorts has tapped the company to develop a GIS-based system to track data about hun-

GIS, page 41

CUSTOMER SERVICE

Data sharing app improves sales, service

By Bob Wallace

THE CALIFORNIA STATE Automobile Association (CSAA) is deploying a custom Windows application that lets its customer service representatives answer questions about its entire line of auto and home insurance packages and travel services.

The application has helped cut telephone time by letting representatives handle inquiries faster and has freed them to handle additional calls. CSAA officials said that has helped elevate customer service.

CSAA customer service personnel knew only one of the company's business areas. Customers who needed more information were handed off to another customer service representative or given another CSAA phone number to call or person to visit. CSAA determined that the quality of customer service, page 41

User group saves with landmark lab sharing deal

By Thomas Hoffman

A CONSORTIUM of 200 chief information officers has reached a landmark agreement with an IT laboratory for discounted testing services that could save some members tens of millions of dollars in testing costs.

The partnership, formed last month between The Chicago Research & Planning Group (CRPG) and Client/Server Labs, Inc. in Atlanta, could mark the first time that an industry association has leveraged its purchasing clout to slash testing costs for individual members, analysts said.

With year 2000 hardware and software remediation accelerating, "Everyone is going to be testing, but not everyone will

Lab sharing, page 41

Videoconferencing boosts productivity

► BankAmerica's call centers get linked

By Nancy Dillon

AGENTS AT BankAmerica Corp.'s new call centers no longer have to depend on ticker-tape-style reader boards for the information they need to do their jobs. Clusters of overhead televisions that show custom-produced content and videoconferences are replacing the boards as part of a plan to make the agents more productive.

The plan involves moving more than 3,000 call agents who work at the bank's National Consumer Assets Group (NCAG) into two new call centers.

S. David Sessions, vice president of information technology at NCAG in Pleasant Hill, Calif., said the \$2 million implementation should pay for itself in two years by slashing

travel costs and making workers more productive.

NCAG is a loan-by-phone and customer service group that processes home equity credit lines and other small loans. Its first fully operational new call center, which houses more than 2,000 agents, is in Brea, Calif.

A call center with 1,200 agents in Rancho Cordova, Calif., will be completed in a few weeks. Both centers have videoconferencing links to managers in San Francisco and Pleasant Hill.

TVs hang from the ceilings throughout the Brea and Rancho Cordova floors. Each of the monitors' 12 channels can show videoconferences with off-site managers, along with training videos, customer success stories, TV programs shown via satellite and real-time



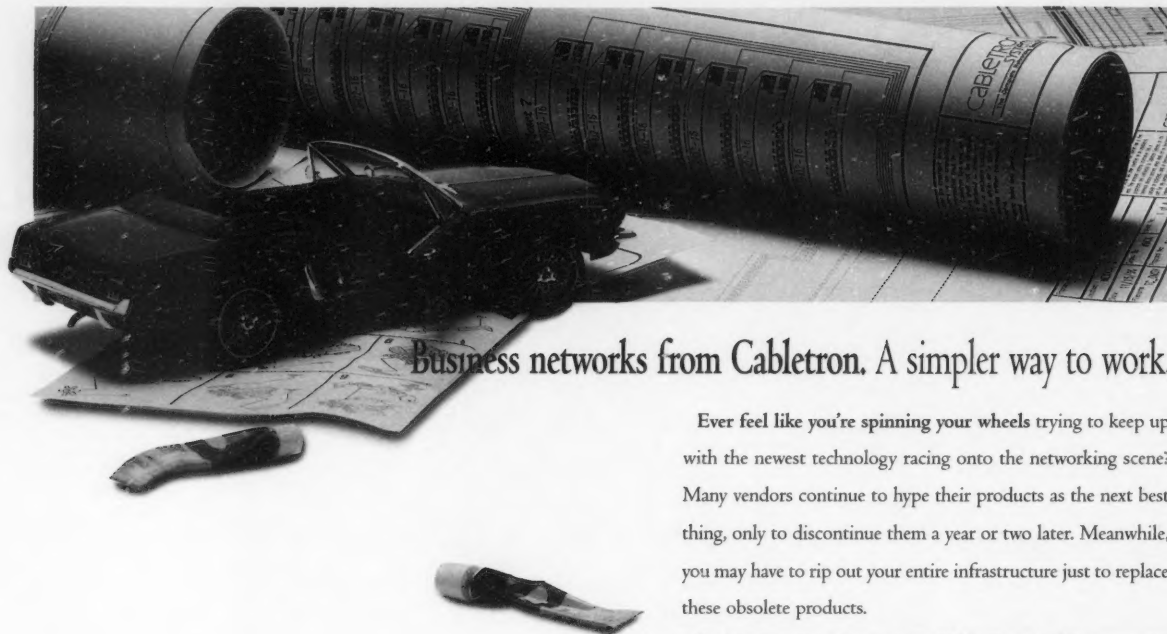
BankAmerica's S. David Sessions: Before videoconferencing, "we had to stop everybody's work and congregate in one place"

statistics reflecting call center productivity.

Sessions said the system could save NCAG as much as \$250,000 in travel costs in the first year alone. "When people want to take trips now, we ask

Videoconferencing, page 41

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- 50. Business Service (except DP)
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- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

- 90. Computer/Peripheral Dealer/Dist./Retailer
- 95. Other _____ (Please Specify)

2. TITLE/FUNCTION (Circle one)

- 19. Chief Information Officer/Vice President/Asst. VP IS/MIS/DP Management
- 21. Dir./Mgr. MIS Services, Information Center
- 22. Dir./Mgr. Network Sys., Data/Tele. Comm., LAN Mgr./PC Mgr., Tech. Planning, Administrative Services
- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

- 41. Engineering, Scientific, R&D, Tech. Management
- 60. Sys. Integrators/VARs/Consulting Management

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- 11. President, Owner/Partner, General Mgr.
- 12. Vice President, Asst. Vice President
- 13. Treasurer, Controller, Financial Officer

DEPARTMENTAL MANAGEMENT

- 51. Sales & Mktg. Management
- 70. Medical, Legal, Accounting Mgt.

OTHER PROFESSIONAL MANAGEMENT

- 80. Information Centers/Libraries, Educators, Journalists, Students
- 90. Other Titled Personnel

- 3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products

- ☐ Yes ☐ No

Networking Products

- ☐ Yes ☐ No

Internet Products

- ☐ Yes ☐ No

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- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

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- 13. Treasurer, Controller, Financial Officer

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- 70. Medical, Legal, Accounting Mgt.

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- 3. Do you use, evaluate, specify, recommend, purchase: (Circle all that apply.)

Operating Systems

- (a) Solaris (e) Mac OS
- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products

- ☐ Yes ☐ No

Networking Products

- ☐ Yes ☐ No

Internet Products

- ☐ Yes ☐ No

4. Do you use, specify, evaluate, recommend, or approve the purchase of Internet products and/or services?

- ☐ Yes ☐ No

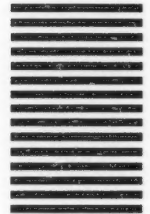
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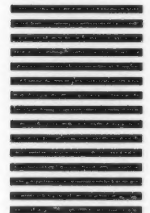
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Sharing GIS talent with world

CONTINUED FROM PAGE 39

dreds of properties worldwide. Another new customer, Pacific Gas & Electric Co. in San Francisco, needs access to massive quantities of data stored at various power-generation sites around California.

"As a consulting company, we always used information technology to support our clients and work efficiently in the environmental area," said the technical director at Harding Lawson's applied information technology group in Denver.

"Then we realized we had clients who had very specific needs for customized applications," which have become a prime revenue-generating initiative, the director said. For example, Harding Lawson has created a separate strategic business unit to develop and market the customized GIS systems.

NO NAMES, PLEASE

So far, it's paying off — so much so that company President Sandy Reise insisted that the technical director and other technical employees interviewed for this story not be identified by name. Otherwise, Reise said, competitors would try to steal them away just as the enterprise begins to turn a profit.

In the company's most recent fiscal year, which ended in May, the new business unit generated \$1.3 million in net revenue. This year, company officials expect that figure to more than double.

Harding & Lawson's primary GIS software is Arc/Info and ArcView from Environmental Systems Research Institute in Denver.

"We've just finished a business plan, and the goal is to have 40 to 45 people working on different projects by the end

of May," said Chief Information Officer Hollis Owen. He is temporarily heading the unit until a permanent executive is hired.

Staffers in the unit will focus on producing custom decision-support software that lets users access and manipulate spatial and text data that typically resides in several different systems scattered across a

client's enterprise.

An oil company, for example, may have one database that contains digitized maps of wells and several other databases that contain drilling and environmental data.

"We can set up an application that lets a user click on a well on the map, then ask a question about it, and our software queries the databases to get the answer," said the unit's technical director. Previously, he said, with the same information housed in several different electronic databases and in paper-

based files, it could take days or even weeks to assemble for review.

No one knew that better than environmental engineering consultants, who planted the seed for Harding's new business, said Vice President Patricia England. "We were redoing our five-year plan and asked employees what opportunities they saw out there. What a very large number of people came back with was ways they were using information technology to differentiate themselves from their competitors," she said. □

Customer service

CONTINUED FROM PAGE 39

tomer service suffered as a result and that there were many lost opportunities to facilitate sales across product and service lines.

Recognizing that, Autumn Wagner and her team spent 18 months creating the Online Guide, a Windows 95 application that gives customer service staffers quick access to the latest data on all CSAA offerings. The Online Guide was first deployed two years ago.

"Now, personnel double-click on an icon, and a menu pops up that they can navigate through or use traditional help functions like search," explained Wagner, manager of human resources information systems at CSAA in San Francisco. "Users can access just the piece of information they need instantaneously."

CSAA serves 3.3 million

members in California, Nevada and Utah and insures more than 2 million people. In addition to auto and home insurance, it offers a wide array of travel services. CSAA has 1,800 customer service staffers.

An evaluation of the application showed that CSAA now provides customers more information faster. It found that about 75% of customer service staffers without the Online Guide took two to four minutes to get at information, whereas 80% of those with the Online Guide reported that it took 30 seconds at the most. And 55% said it took only a few seconds if the Online Guide was one of their bookmarked sections.

CSAA

What It Is: California State Automobile Association

Status: Provides travel services to its 3.3 million members and home and car insurance to more than 2 million people

Online Guide goals:

- Improve member and employee satisfaction
- Reduce operating costs
- Increase employee productivity

"The more you become familiar with it, the more you use it, because it's easy to use and provides immediate access to the information you need," said Myrtle Hudson, a district manager at CSAA's Grass Valley, Calif., office.

Strategic Evaluation and Assessment Associates LLC, an independent consultancy in Portland, Ore., which performed the evaluation, said the Online

Guide is successful because CSAA invested so much effort prototyping it. "CSAA learned to put depth into the system so that its workers could easily access all the data they needed," said Teri Lund, a partner at Strategic Evaluation.

The Online Guide and a companion application that lets CSAA specialists update it won a customer service application award from Microsoft Corp. □

BankAmerica videoconferencing

CONTINUED FROM PAGE 39

them, "Is this something that could be handled with a videoconference?" he said. The video monitors are easier to read than the older text-only reader boards, Sessions said, and the depth of information available is much greater.

Soon, videoconferencing will let managers at the call centers hold weekly divisionwide meetings while call agents remain at their stations. "Before, we had to stop everybody's work and congregate in one place," Sessions said. Allowing agents to remain on the floors will save three to four hours of productivity per person per month, he said. "With over 3,000 agents, that's a lot of hours saved."

Ed Buckingham, an analyst at International Data Corp. in Framingham, Mass., said NCAG's hope to recover the \$2 million investment in two years is reasonable. He said travel-related savings is the primary benefit of enterprise-level videoconferencing, and the time saved on travel can be put back into work.

Avistar Systems LP in Palo Alto, Calif., made the video system. The hardware infrastructure includes more than 40 two-way videoconferencing seats, more than 150 TV monitors and two 12-channel cable systems. Sessions said he chose Avistar because he wanted studio-quality conferencing and low-cost distribution. □

CONTINUED FROM PAGE 39

have the infrastructure to devote to testing," said Paul Johnston, an analyst at International Data Corp. in Framingham, Mass.

Information technology partnerships designed to achieve economies of scale — even when it involves cooperation among competitors in the same market — "is a trend that's coming" to the services industry, Johnston said.

Under the agreement, Client/Server Labs will offer CRPG members a variety of services, including a test subscription for performance results on gear such as RAID storage subsystems and middleware. Client/Server Labs also will work with CRPG members on multiclient test studies, custom testing for individual members and IT benchmarking.

"The whole value of the lab is that we have now the capability

of creating a very sophisticated repository of data on tests being performed," said Dick Arns, executive director of the Chicago-based consortium. The group's members include manufacturers such as Kraft Foods, Inc. in Northfield, Ill., and American National Can Co. in Chicago.

Under one of the pricing scenarios, Arns said, CRPG members would likely pay an annual fee of between \$5,000 and \$10,000 to gain access to a handful of tests.

The partnership seems cost-effective said Don Saulic, chief information officer at BAX Global, a \$1.5 billion transportation and logistics management company in Irvine, Calif., which belongs to the CRPG.

Client/Server Lab's services "will allow us to test different types of technologies we're thinking about using," Saulic said. That way, BAX doesn't

have to "go out and re-create the wheel." BAX recently launched a three-year effort to build a multitier system to provide improved supply-chain and transportation management services.

The new architecture, Saulic said, is expected to improve customer service and help BAX run its operations more efficiently.

Using Client/Server Labs to test its implementation will help, Saulic said. He said he expects BAX to save in the "tens of millions of dollars" in equipment, training fees and testing because the company doesn't have to build a lab of its own.

To make the testing deal work, the CRPG will need to prioritize which members get access to the laboratory first, analysts said. A second challenge will be to duplicate each member company's network configuration and re-create "all of the defects and performance hits," said Michael Barnes, an analyst at Hurwitz Group, Inc., a Newton, Mass.-based consultancy. □

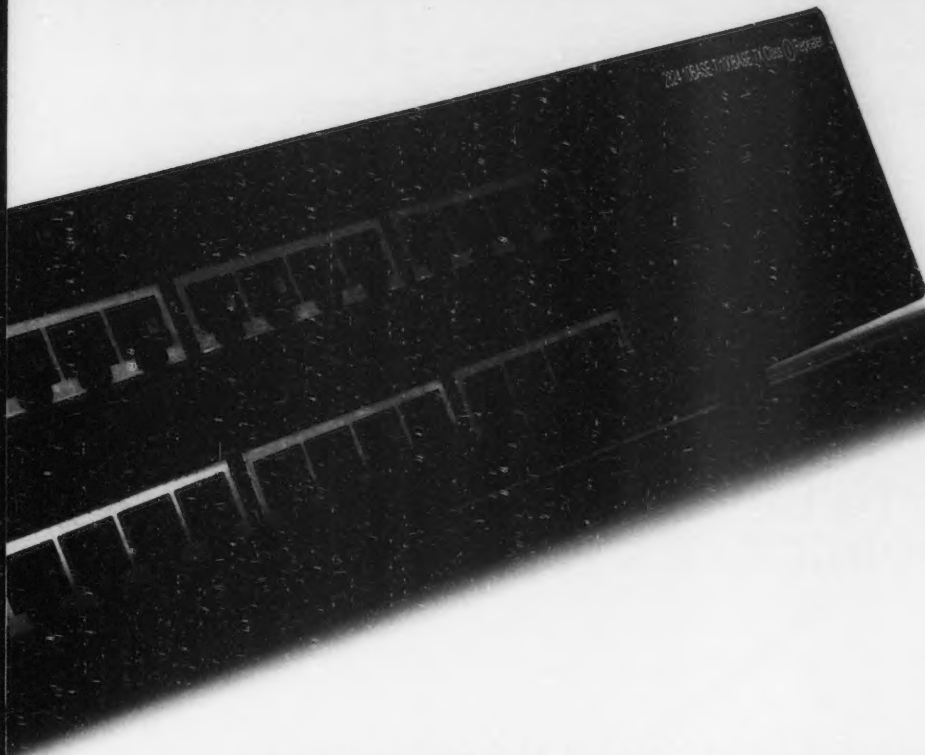
Lab sharing deal

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Briefs

SENIOR 'NETIZENS

- 83% of older 'netizens log in at least once per day
- Older 'netizens are more likely to buy products online than younger users
- Older 'netizens use E-mail more often than younger users

Base: 1,050 Excite users over age 50

Source: Excite, Inc., Redwood City, Calif.; Third Age Media Inc., San Francisco

Microsoft's last beta

With its Windows NT 4.0 Option Pack, Microsoft Corp. shipped the third and final marketing beta of Internet Information Server 4.0, Transaction Server 2.0, Message Queue Server 1.0, Certificate Server 1.0, Index Server 2.0, Site Server Express management tools and the Java Virtual Machine for NT Server. Also included is Internet Explorer 4.0. The package is free for NT Server customers, who can choose to download the software or order a CD-ROM from Microsoft's World Wide Web site (www.microsoft.com/ntserver). Final products are due by the end of the year, according to a company spokesman.

Team Web development

NetObjects, Inc. last week announced TeamFusion, an application that will allow groups of technical and nontechnical staff to collaborate on building big, corporate Web sites. The Redwood City, Calif., company said the product includes a Java client to help nontechnical staffers submit content to a Web site while information systems managers use a suite of tools to manage workflow and content on a big site. TeamFusion will ship by year's end. Vendors such as Mortice Kern Systems, Inc., Wallop Software, Inc. and Vignette Corp. have similar products.

Software tokens shield data

► Change in safeguards saves company money

By Sharon Machlis

OPPENHEIMERFUNDS, INC. is moving to software-based password generators instead of handheld hardware devices as a way to save money while safeguarding data, said Jim Patterson, vice president of security and telecommunications at the financial firm in Denver.

In the past four months, the company rolled out the software tokens to about 400 mobile users. The tokens cost about \$15 each and replace hardware tokens that cost about \$50 apiece, Patterson said.

MAKING IT EASIER

Both the software and hardware versions generate one-time passwords for remote users through a synchronized exchange initiated by the server. The handheld hardware devices had to be carried on the road, where they could be dropped or lost, Patterson said. That added to the cost of the system. The

devices also had to be tracked separately from the laptops they were used with, expanding the amount of inventory to monitor. The software-based system, from Acent Technologies, Inc. in Rockville, Md., is "easy for me to administer," he said. And, users like it because the software enters the password automatically.

OppenheimerFunds seeks to protect data while saving money with software tokens.

The hardware tokens generated a password on the handheld machine that users had to type in to a laptop for remote access.

Software tokens are "definitely easier to administer, because people don't lose them," said Philip Carden, managing consultant at The Registry, Inc., a consulting firm in Hoboken, N.J. They are good protection against network eavesdroppers and for moderately sensitive data. But hardware tokens provide greater protection against skilled industrial spies because, if a laptop is stolen, there still is no way to generate the needed password.

OppenheimerFunds' Jim Patterson says the new tokens help him keep a tight rein on a network that connects an IBM mainframe and servers that run Unix, NetWare and NT.

STEVEN J. BARNETT



The one-time passwords are aimed at thwarting "sniffers" that read packets or keystrokes over a network. They also deal with the problem of user-selected passwords that can be easy for a hacker or automated password-cracking program to guess.

HANDLING IDIOSYNCRASIES

The new tokens are among several security programs Patterson said help him keep a tighter rein on a network that connects Unix, Novell, Inc. NetWare and Windows NT. **Software tokens, page 46**

Frequent-surfer programs help pull in the hits

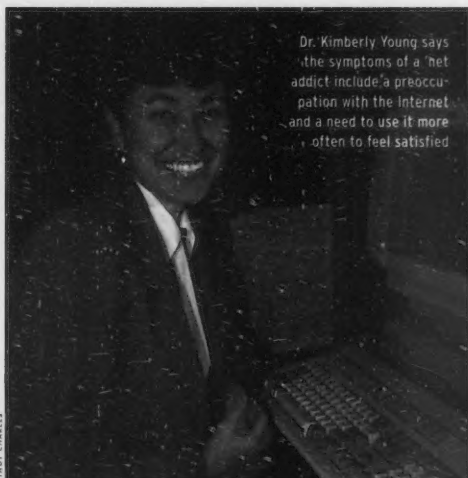
By Mitch Wagner

TRAVELS IN cyberspace can make it cheaper for Internet users to travel in the real world, as companies launch incentive programs to help drum up repeat business online.

Companies are rewarding consumers with frequent-flier-like points or free software to keep them coming back to sites or to reward desirable behavior such as buying products on the Internet. In the latest entry in frequent-surfer programs, Net-

About a half-dozen companies offer incentive programs online.

Q: Is the Internet addictive?



Dr. Kimberly Young says the symptoms of a 'net addict include a preoccupation with the Internet and a need to use it more often to feel satisfied.

► Psychologist calls 'net mania an illness

By Kim S. Nash

HE MAY NOT be wild-eyed or foaming at the mouth, but an Internet addict probably lurks in your midst. So said Dr. Kimberly Young, a professor of psychology at the University of Pittsburgh in Bradford, Pa., in an interview with *Computerworld*.

After a three-year study of 396 'net addicts — whose average time online per week is 38 hours — Young concluded that there is an illness among us. Young's findings, and subsequent recommendation that the phenomenon be added to medical books, are controversial. But, she said, "I didn't

ALIAS, CONTINUITY

"At their hearts, these things are continuity programs designed to encourage people to participate more in business on the Internet," said Denny Waldera, vice president of di-

Frequent-surfer programs, page 46

CONTINUED FROM PAGE 45

Systems administrators may test

DEFINING POLICIES

It takes some initial time investment to set up properly and define all the policies for each platform, but Patterson

Patterson found similar problems with Kerberos, a ticket-based network authentication system that uses a few hundred bytes of data to identify a user. "It really hasn't caught on much," he said. "It's extremely complicated — very expensive to implement. I think you get a lot of bang for the buck if you use it in a specific application" vs. a whole enterprise. □

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CONTINUED FROM PAGE 45

PROMOTING ONLINE

David Marshak, an analyst at Patricia Seybold Group, questioned the value of paying consumers for reading ads. "Do I want people who value 50 cents to be reading my ad?" Marshak asked. "We have not seen any information that this model is working." □

■ Hello, Direct pays a commission to MotivationNet for the sales. The company believes this will drive customers to its site who will later buy products at full price.

Gates opens up for questions

Those who stayed until the bitter end of Microsoft Corp.'s Professional Developers Conference in San Diego two weeks ago got a chance to ask the top man, Bill Gates, some questions. Excerpts of his question-and-answer session follow. Computerworld Senior Editor Carol Sliwa, who attended the event, paraphrased attendees' questions and edited Gates' answers for brevity from a Computerworld transcription of the event.

QUESTION: What is your opinion on the newly proposed government restrictions on domestic cryptography?

GATES: I spent a fair portion of this week on the phone talking to people in Congress about what a bad thing it would be in many ways if the new legislation that some people are considering were passed.

To date, we've had a huge problem, because we can't export decent encryption. We're stuck at 40 bits, which is easy to break. And foreign software competitors are shipping lots of 128-bit software. So our customers outside the U.S. say, "Hey, you're providing us inferior products." And we have to say, "Well, it would be a felony to provide you with decent encryption."

Some of the domestic law enforcement people came in and said, "No, instead of freeing up the export, we're going to restrict domestic use of encryption. And we're going to insist that every software product be restructured so that there is a back door, so the government can get in and see exactly what you're saying, without you knowing about it."

It really doesn't address the fact that people who want encryption and use it to hide bad activities will still be able to do that. So I think this is a serious issue that hasn't gotten as much attention as it deserves. It's not just a business issue for everybody in the software industry. It is an issue of embracing the Information Age, which other countries have done. And it's an issue about civil liberties.

Q: Should developers continue investing in ActiveX controls or move toward dynamic Hypertext Markup Language (HTML)?

GATES: Well, we believe ActiveX controls are the way to get the most flexibility in terms of having code run on the

client. You've got really three levels. You've got HTML, including dynamic HTML. You've got the scripting capability. And it's important — there's a big, big difference between that and Java. And then finally, if you want to write in any language, we have the ActiveX controls.

We do think that the biggest component software business out there today is ActiveX controls. . . . We think the momentum there will continue to grow and that in a wide-area sense, most people will stick with dynamic HTML and scripting, as opposed to either Java or very, very rich controls.

Q: Do you write code anymore?

GATES: I wish I got a chance to write more code. I do mess around. They don't let my code go in shipping products [laughter]. They haven't done that for about eight years now. When I say I'm coming in to write

this over the weekend, they don't really believe me quite as much as they used to.

But certainly when it comes to the new things we're doing, I always thought COM, the source code, was a little bit verbose, you might even say arcane or ugly. But, COM+ — I'm very excited about that. I mean, it really is sort of direct access, using these component libraries in the right way. And certainly I'll be able to clean up some of the things I've hacked around with.

Q: Microsoft reportedly has banned the use of Java applets on its World Wide Web site, but at this conference it didn't give the impression that it is discouraging the use of Java. Can you comment on that?

GATES: When people use the word Java, they can mean two different things. They can mean Java the language, which we think is a good language — and we believe we've got a great implementation of that language. The second thing they can mean is that instead of taking advantage of the computer that somebody owns, you just use the vanilla set of run-time services. So if I own a computer, whatever it is — a Macintosh, Windows computer — when you're shipping that application, what you're saying is, "We do not use the user interface, or the clipboard, or the color management, or the high-speed graphics."

For rich applications, do you ever want to take advantage of an operating system, or take advantage of a database or a middleware product? And it's our view that people are going to keep calling pieces of

software. . . . So you'll find us very agnostic about languages. We're going to continue to evolve Visual Basic. We're going to continue to evolve Visual C. We think other languages that we're not involved in, there will continue to be code there.

It's very hard to go to a chief information officer and say, "It's your lucky day. Rewrite all your applications. They'll only be a little bit slower." □

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SHORT

Auto-return

Reston, Va.-based TenFour US, Inc. has announced TFS WebWaiter, software that lets users retrieve information from a World Wide Web site without surfing the Internet. The software,

which is an add-on option for the company's TFS Gateway interface among disparate mail systems, delivers information from the Web either to a users desktop or electronic-mail inbox. TFS WebWaiter will ship in the fourth quarter.

Internet addicts seek help

CONTINUED FROM PAGE 45

start this to make trouble."

CW: Why does Internet addiction happen?

YOUNG: Fantasy games and chat rooms are exciting. Beats real life. A lot of addictions are based on pleasure-

seeking behavior. It's not the alcohol people like, but what it does to them. The Internet has become an escape mechanism for some people. For people who don't get addicted, it's just a tool. They don't see the fuss.

CW: Your study was conducted over three years. Could you see the addiction growing in people?

YOUNG: I did see that. They called me when they were at end of their rope. They wanted validation because

no one believes it's real.

CW: You presented your findings to the American Psychological Association in August 1996. How were you received?

YOUNG: I'd say "mixed." I have a lot of supporters out there. I get a lot of people from the computer science field [who] concur. They recognized it as a problem years ago, but no one took it seriously until it hit the commercial market.

Other people say I'm blowing it out of proportion. I don't necessarily compare Internet addiction to drug abuse. It's more like pathological gambling — a behavior addiction [where] things can get out of hand.

A three-year study of 396 'net addicts showed that the average time online per week was 38 hours.

CW: Isn't it a long, arduous process to revise mental health standards?

YOUNG: There was a man named [Robert] Custer who in the early 1980s developed the idea of compulsive gambling, and no one believed him. It took 14 years from his original statements [until the illness's] inclusion in the medical lexicon. It will take a decade or two for research to be conducted [about Internet addiction].

The criticism is based on opinion. [Skeptics] have done no research that disconfirms it exists; they just don't agree with it. I'm not saying it's a rapid epidemic. But there's a tool out there that's causing problems. There are enough cases where you have to say, "Wait a minute." This is not like a phone or a television. It allows people to create new relationships and abandon marriages.

CW: Given that most people on the Internet access it from work — or at least that's where they get their first taste — what responsibilities does the employer have here?

YOUNG: To figure out good policies on Internet use. Employees are going to use it for personal things. They just are. The problem is, it's so easily misused, and the company fires you right away if you [abuse 'net privileges]. That is not a good answer. Companies need to know they're presenting a temptation.

Employee assistance programs need to get involved with this addiction. Telling an alcoholic to stop drinking doesn't work. They need intervention. I encourage companies to consider that, when you give employees online access, there will be some who have problems with it. You need to devise an intervention instead of just firing them.

CW: Will treatment for Internet addiction become a standard health benefit 10 years from now?

YOUNG: There will be some validation of the illness. I'm just not sure what form that will take. □

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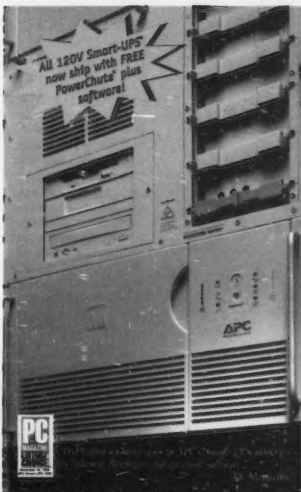
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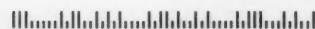
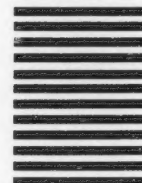
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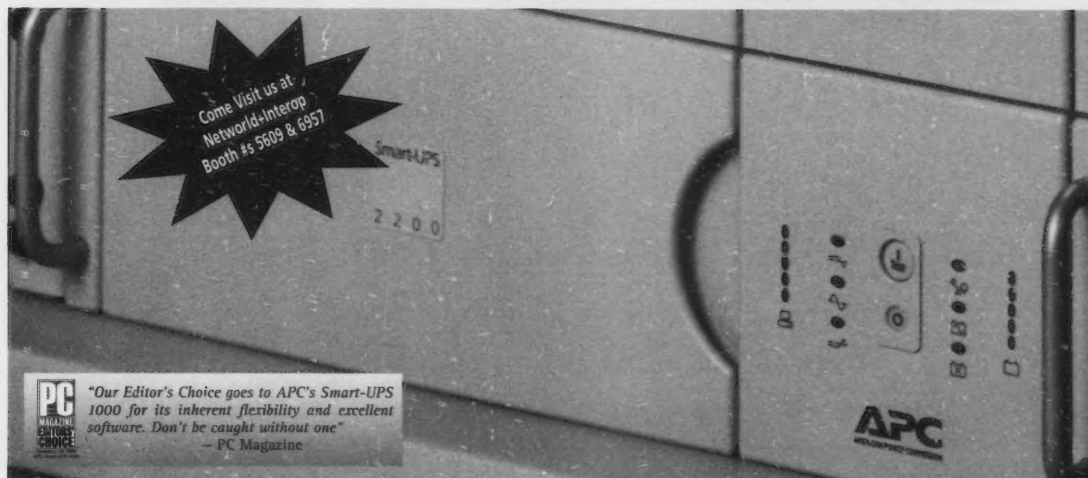
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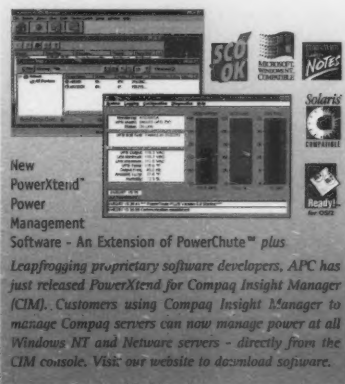


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Briefs

Global directories are expensive

When implementing a global directory, an organization with 50,000 users can expect to invest \$2.5 million to \$3 million for acquisition and deployment in the first three years.

Source: The Radicati Group, Palo Alto, Calif.

NetWare backup

Legato Systems, Inc. in Palo Alto, Calif., has released a new version of its backup and recovery package for Novell, Inc.'s NetWare and Microsoft Corp.'s Windows NT platforms. NetWorker 4.12 for NetWare offers full support for all NetWare data and resources. It also features simplified installation from multiple platforms and a new administrative Windows NT-based graphical user interface that manages all NetWorker 4.12 servers from one interface. NetWorker 4.12 for NetWare is shipping now. Prices start at \$1,000 for the Workgroup Edition and \$2,000 for the Network Edition. The company has also released its NetWorker Power Edition for Windows NT Server Enterprise Edition 4.0. It uses 4G bytes of memory tuning to let businesses increase the amount of RAM allocated to the Power Edition on a very large database system. It will ship this month and costs \$5,000.

NT management

CompuLert Enterprise Management Solution from Tone Software Corp. in Anaheim, Calif., lets network administrators monitor and control their Windows NT networks, multiplatform distributed systems and hardware throughout the enterprise. Administrators can access the NT management console for diagnostics and to reboot the NT Server from any CompuLert workstation. Pricing starts at \$27,000 for a 25-user license.

Madman users plot to manage E-mail

► EMA group wants users to track messages

By Barb Cole-Gomolski

FOR E-MAIL ADMINISTRATORS, the idea of end users tracking the whereabouts of their own electronic-mail messages seems like a fantasy.

For one thing, it could mean the end of the "I sent it, but it never got there" technical support call. A subcommittee of the Electronic Messaging Association (EMA) in Arlington, Va., is working to make that possible. It is giving anyone in the organization with a World Wide Web browser access to performance and management information about their E-mail.

The EMA's Messaging Management Committee seeks to

marry E-mail management and the Web. Specifically, the group plans to build a Java applet that would collect data from the Mail and Directory Management (Madman) Management Information Base (MIB) and deliver it to Java-compliant clients.

MIBs collect operational data on networked devices and applications for monitoring by management tools using the Simple Network Management Protocol.

The EMA group also is considering developing a separate Java-based message-tracking specification, possibly based on SunSoft, Inc.'s Java Management Application Programming Interface. That specification is

MIBs collect operational data on networked devices and applications.

FAQ: Madman MIB

Q: What is the Madman MIB?

A: Madman is a collection of three Management Information Bases that deliver E-mail monitoring and performance data and directory information to SNMP-based management systems.

Q: Is Madman widely implemented?

A: It is supported in most messaging systems.

Q: How will adding Java hooks to the Madman MIB change things?

A: Anyone with a Java-enabled client will be able to view the information.

Q: What is the benefit of managing E-mail within a World Wide Web browser?

A: It gives audiences much broader access to the monitoring information. For instance, end users could track the location of a message they sent.

used for building cross-platform management applications based on Java.

Bridging the gap between the Madman MIB and the Web could mean the end of managing messages from the glass house, said Bruce Ernst, a product line manager at Lotus Development Corp. in Cambridge, Mass., and a member of the EMA committee. Distributing

Madman, page 56

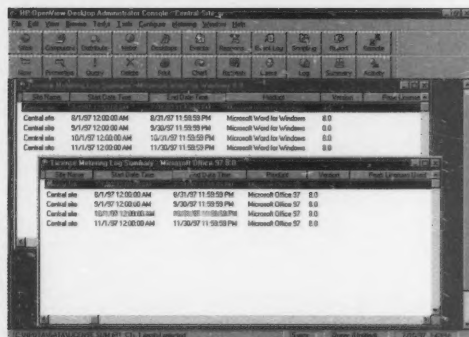
IBM host gateway tool still trails rival

By David Strom

IBM'S LATEST VERSION of its Web/3270 gateway software is making progress, but it is still trying to catch up to many of its competitors.

Viable alternatives include Corridor from Stillwater, Okla.-based Teubner & Associates, Inc.; Salvo from Ottawa-based Simware, Inc.; and InfoConnect Gateway, page 56

HP embraces desktop management



Desktop Administrator can manage and track user hardware or software through an object-oriented interface

By Patrick Dryden

HEWLETT-PACKARD CO. this week will close a gap in its OpenView tool chest with products designed to reduce the cost and complexity of managing PCs.

HP will launch OpenView Desktop Administrator, a hardware/software management suite based on Norton Administrator for Networks, a product it acquired in April from Symantec Corp.

The goal is to help central administrators distribute software, track inventory, manage configuration, meter usage and take control of hundreds or thousands of PCs in conjunction with key OpenView tools for managing systems and networks.

Desktop Administrator lacks sophisticated integration with HP's other tools in this release, and its enhancements were being developed before the transition, said product managers at HP in Palo Alto, Calif. Even so, HP is tackling the desktop management problem the right way, analysts and users said.

Despite all the current interest in integrated enterprise management frameworks, "it's more important to focus on specific ways to manage the client, the single most expensive part

Desktop, page 56

REVIEW ►

Host on Demand Version 2



IBM
Research Triangle
Park, N.C.
www.networking.
ibm.com/hex/
hexprod_en.html

Price: \$199 per user

Pros:

- Provides access to host systems, including 3270 and 5250
- Gateway incorporates authentication for added security

Cons:

- Could use better documentation
- Too many submenus for launching bits and pieces of the product

NO

from the

brought you a little

GTE Internetworking

BBN built the forerunner to the Internet, and sent the world's first e-mail. They run the world's leading Internet research center, BBN Technologies. Now, BBN has joined forces with

GTE to create GTE Internetworking. We are investing hundreds of millions of dollars to build a backbone network 100 times bigger than today's Internet—big enough to withstand the

DW

folks who

thing called the Internet.

rigors of business. For companies large and small it means a quicker, more reliable, more secure way of doing business on the Internet. In fact, GTE Internetworking provides the only

Web hosting service that has aced every security test thrown at them by the National Computer Security Association. To find out more, call 800-472-4565, or visit www.internetworking.gte.com.

GTE

INTERNETWORKING
POWERED BY BBN

Madman users plot to manage E-mail

CONTINUED FROM PAGE 53

management information to a wider audience would ease the burden on IS by allowing end users and administrators in far-flung offices more ready access to performance and tracking data. It also could help companies that are saddled with multiple mail systems that lack a common management tool.

GROWING DEMAND

"The lack of management tools is a real drawback for most messaging systems and especially Internet mail systems," said Patrick MacNamara, a systems administrator at EMI Music, Inc. in New York.

The record company uses third-party products to monitor its Lotus CC:Mail network.

But growing demand for Internet connectivity is putting pressure on the company to get

a handle on messaging management that would span across the Internet, he said.

"Today, when it comes to Internet mail, we can't guarantee delivery, and we can't track messages," MacNamara said.

The Madman MIB is a natural place to start because it is supported in most messaging systems, members of the EMA committee said.

Committee chairman, Gordon Jones, lead scientist at The Mitre Corp., a federally funded research center in McLean, Va., said the group hopes to offer a public demonstration of the Web-based management work at the EMA's annual conference in April.

The group might post its applet, which would work with any Madman-compliant mail system, at the same time, he

IBM tool plays catch-up

CONTINUED FROM PAGE 53

Host Publishing from Attachmate Corp. in Bellevue, Wash.

IBM's software, called Host-On-Demand (HOD), adds features that were missing from the first release. That includes authentication for mainframe access from within a browser and TN5250 emulation.

If you don't need the new features, you can save some time by using Version 1.0. That version is part of Netscape Communications Corp.'s bundle with Communicator 4.0.

IBM also has added a series of application interfaces to automate browser-only connections to the mainframe. The interfaces are Host Access Class Libraries for Java, and they are documented in the usual turgid IBM fashion with few examples.

The libraries take a new twist on host-session automation by providing direct access to the host-session data without an emulator.

Prior to this interface, most of us used the Enhanced High Level Language Application Programming Interface to do these tasks. That interface required a host emulator running in the background to scrape its screen data. And it was pretty particular about the type of emulator and platform it would run on. The code for that interface was tough to debug and test. It required lots of skill to trap errors and make it work.

The new Java-based interfaces work better, but they are both a blessing and burden. First, they reside on the server and download to the clients as they are needed. That makes it easier to maintain applications written to the interface. Second, IBM has widened the interface's potential appeal by making it possible to automate 3270, 5250 or VT-

100 Telnet sessions with the same set of tools and Java libraries.

The downside is that you need to know a lot more about Java than you'd probably like to.

You'll want to read up on Java security and running signed vs. unsigned applets; decide whether to download the client code for HOD or load it locally; and learn how to run a secure web server and how to obtain a trusted-key pair. If you are new to Java, this isn't the place to start learning these things, and

est version of the Java Virtual Machines.

We also had trouble with intermittent crashes when running HOD under different versions of Microsoft Corp.'s Internet Explorer and Navigator.

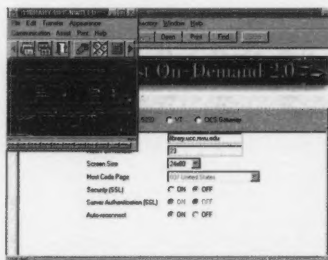
There are several ways to configure HOD, and that's also part of the burden. You can use HOD as a simple 3270 emulator inside a browser and connect directly from your PC to the host via TN3270. You can also set up a gateway to authenticate users on a secure web server

and connect that gateway. You can configure several sessions so they show up as icons inside a browser window, which would make it easier for users to find the right sessions. I was a bit concerned about the many submenus that were created by the installer:

There are far too many for my taste, and that will confuse users down the road.

All in all, HOD reminded me of the early days of 3270 LAN gateways, when products would crash, certain keystrokes weren't emulated properly and response time was sluggish. HOD represents a fair effort by IBM to keep up with the pack, but other products do a better job. It bears watching, though, especially if its Java-based interface catches on and is supported by other emulation vendors. □

Strom is a freelance writer in Port Washington, N.Y., and publisher of Web Compare (www.strom.com).



Host-On-Demand is a Java-based client that can connect to several host systems

you might be better off with other products that use ActiveX and Visual Basic.

Yes, the product works across various operating systems, but getting HOD to do so will require effort. Trying to understand what the underlying browsers and operating systems support becomes a real challenge before you can deploy HOD. For example, you'll need the latest patches and fixes to Internet Explorer 3.02 or you can run Version 4.0. But it supports Navigator 3.x and 4.0.

And if you want to cut and paste from inside a host session, you'll need the latest Version 4.0 browsers with the lat-

Desktop management

CONTINUED FROM PAGE 53

of total IS cost," said Kurt Schlegel, a research analyst at Meta Group, Inc. in Westport, Conn.

Most important, HP now offers "a scalable desktop management product with robust architecture underneath that can really be used," said Rich Pitak, director of systems management research at D. H. Brown Associates, Inc. in Port Chester, N.Y.

That's what John Hirt, director of client services at Elf Atochem, Inc., discovered when he implemented the prior version of this suite three months ago.

"I could kick myself for not adopting it sooner," Hirt said. "This has saved us a tremendous amount of manpower and trouble supporting our 3,500 PCs."

For example, rolling out a suite of office applications to 1,000 users at the chemical manufacturer's headquarters in Philadelphia took nearly seven months and a visit to every PC.

But through inventory, software distribution and remote control functions, two operators installed a browser in less than seven weeks to connect those

users to the company intranet. "Now we can handle change much quicker than before, with better records for the help desk to provide support and for finance to track desktop assets," Hirt said. He expects to upgrade next month to Desktop Administrator.

Rudimentary integration with other OpenView tools helps users avoid the "tough implementation" of enterprise management products, such as Unicenter TNG from Computer Associates International, Inc. and TME 10 from Tivoli Systems, Inc., Schlegel said.

Pricing starts at \$67 per node for up to 250 nodes.

Desktop Administrator can send alerts to HP's IT/Operations console for correlation with system and network events. It also links to HP's IT/Administration and to the Windows NT version of Network Node Manager so operators can click on a map icon and see properties of that desktop or server.

HP officials said they plan next year to integrate parts of the PC Common Operating Environment systems management tools. □

Intel seeks more support for LANDesk ware

By Patrick Dryden

INTEL CORP. seeks broader acceptance of software that makers of desktop and mobile PCs can offer to make their hardware more manageable.

Launched nearly a year ago, LANDesk Client Manager required Intel's monitoring console and proprietary protocol to work. A version introduced last week supports several standards so vendors can more easily cus-

tomize alert and control capabilities for their users. The new version of Intel's management interface is based on the Hypertext Markup Language to simplify the addition of new features, such as sensing problems with a unique storage device or detecting attempts to open the case. Certificate-based authentication can secure networked systems from unauthorized access. LANDesk Client Manager supports the Simple Network

Management Protocol and the Desktop Management Interface so managed PCs can trap and send event information to diverse monitors.

Gateway 2000, Inc., IBM, Packard Bell NEC, Inc. and Toshiba America Information Systems, Inc. all support Intel's software. But leading suppliers such as Compaq Computer Corp. and Hewlett-Packard Co. provide their own management software. □

Lucent takes aim at large users

By Matt Hamblen

LUCENT TECHNOLOGIES, INC. in Murray Hill, N.J., hopes to expand the market for its red circle brand by enticing large businesses to buy its recently announced data networking boxes and software.

Whether Lucent can go beyond its role as a major telephone switch provider — the company reported \$23 billion in revenue last year — and become one of a handful of leaders in data networking is open to debate, analysts said.

But one Lucent customer plans to at least test the company's new high-end MX1000, a 10G bit/sec. multiservice switch. "You don't really think of Lucent as a data vendor, but they are becoming that in a lot of people's minds," said Mike Myrick, manager of network devel-

Core switches — which are often found in buildings run by local and long-distance carriers — are "big and fast and dumb," Pultz said. They must be able to direct traffic to other carriers on the pathway and handle much more traffic

at once. "Lucent has been mostly known for its carrier-class core switch and didn't have a lot of investment on the enterprise level," he said.

Analysts said Lucent needs to add more products in Gigabit Ethernet and

IP routing and switching to be taken seriously as a corporate internetworking vendor.

In response, a Lucent spokes-man said the company is likely to make several acquisitions in the next two years to fill its product gaps.

Lucent last year acquired Agile Networks Group in Concord, Mass., and Agile engineers developed the Lucent AX500, an ATM switch for LANs. □

MX 1000 SWITCH

- Supports: ATM classes
- Bandwidth: 622M bit/sec. per slot, with 14 slots
- Availability: Q1 1998
- Starting price: \$54,000

opment at the University of Mississippi in Oxford.

"Lucent is [the home] of Bell Labs, and that's where a lot of inventions and innovations came from. I feel confident with that background," he said.

Another user, Greg Ruttman, a telecommunications manager at Commercial Financial Services in Tulsa, Okla., plans to test Lucent's upcoming OneVision 2.0 software, a tool for managing services and devices by several vendors over a network. That product is expected to ship this month.

All the data networking products will be shown at Network/Interop '97 this month in Atlanta.

The MX1000 may be the most significant of the recently announced Lucent products for large business users, analysts said. With a starting price of \$54,000, it will sell for 25% less than comparable products from competitors such as Cisco Systems, Inc. and StrataCom, Inc., both in San Jose, Calif., said Jay Pultz, an analyst at Gartner Group, Inc. in Stamford, Conn.

The MX1000 will provide Asynchronous Transfer Mode (ATM) switching. It will interoperate with other Lucent products, Bay Networks, Inc.'s routers and switches, and devices by other vendors. The MX1000 is an "edge" switch, designed to sit on the edge of a company's network and connect it to the wide-area network. Edge switches must be able to interface with ATM and non-ATM traffic, converting all data into a common format before sending it to a core switch, analysts said.

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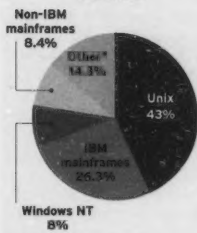
Software

Databases • Development • Operating Systems

Briefs

Worldwide multiuser database revenues by operating environment

Total 1996 revenue: \$9.2 billion



*Includes OS/2, OS/400 and host VMS

Source: International Data Corp., Framingham, Mass.

SAP travels

SAP AG is spreading R/3 into the area of corporate travel management.

The company is teaming up with Amadeus, the Barcelona, Spain-based global corporate travel system, to create corporate travel management software.

Plans are to develop a travel planner, policy manager and decision manager within R/3 to incorporate business processes and workflow management. End users then will be able to book their own travel without worrying about violating corporate policy or expense limits.

Feds to replace DES

The federal government has launched an effort to find a new governmentwide encryption standard to replace the 20-year-old Data Encryption Standard (DES), which is also widely used in the private sector.

A notice posted in the Federal Register seeks proposals by June 15, 1998, for an Advanced Encryption Standard (AES). It is expected to take years to decide on an AES, which may co-exist with DES in the meantime.

More information can be found at http://csrc.nist.gov/encryption/aes/aes_9709.htm.

Microsoft breaks proprietary line

By Sharon Gaudin

MICROSOFT CORP. is looking to take its data access capabilities cross-platform this week.

The software giant is releasing components today that, when used with its application development tools, should enable users to access a wide variety of database and Internet information, even if the database doesn't run on Windows NT or a SQL server.

The components, which are now stand-alone programming elements, are expected to be delivered in the next versions of

Microsoft's tools, including Visual Basic, Visual C++, Visual Studio and Visual J++.

"That will be pretty useful because we deal with a lot of database-oriented issues," said John Hoover, a senior software engineer at Rochester, N.Y.-based Johnson & Johnson Clinical Diagnostics, which uses Microsoft, Oracle Corp. and mainframe databases.

"Right now, we have to create our own components to make those connections. This will save us time, and thus it will save us money," Hoover said.

The components can be



Dunsgate's Dave Lingren:

"OLE DB gives you a standard so everything has one way of asking for data from all the different sources"

downloaded free from Microsoft's World Wide Web site at www.microsoft.com/data.

This move comes a week after Microsoft announced it was enhancing its slate of application development tools so that applications built with them would be accessible from any Microsoft, page 66

16-BIT APPLICATIONS

Corel, Lotus struggle for hold in market

By Gordon Mah Ung

WHEN MICROSOFT CORP. abandoned crowds of 16-bit desktops in its push for Windows 95, Corel Corp. and Lotus Development Corp. stood to make a killing with sexy new Windows 3.1 versions of their office productivity suites.

At least that's the way it was supposed to happen — according to Corel and Lotus. Analysts, however, who say Microsoft has failed to address the large population of corporate Corel, page 66

• Maintenance management systems

Field workers get wired

By Randy Weston

MAINTENANCE management software is hitting the road.

Project Software and Development, Inc. (PSDI) in Cambridge, Mass., is rolling out a version of its maintenance management software system that will run on handheld devices. Competitor Indus International, Inc. in San Francisco has had a similar product on the market for several months.

The software was designed for industries such as utilities, in which maintenance work is highly regulated and workers in the field or at remote sites must

track it so their employers can demonstrate compliance.

Maintenance management software in general is used to manage and track maintenance work orders and schedule regular maintenance routines.

For example, the New York Power Authority, a White Plains-based wholesaler of electricity, uses the devices to track maintenance on and around transmission lines. The power company's lines carry about a third of New York state's electricity, including the power that drives New York City's subways.

Field workers, page 62

PSDI's Maintenance Management Applications for handheld devices

Application	Function
Maximo Procedure Builder	Guides end user through maintenance process, including safety and compliance requirements
Maximo Rounds	Manages routine maintenance work orders
Maximo Lockout/Tagout/Lineup	Used to control, verify and document changes to plant components such as opening and closing valves and breakers

FACT FILE

	InterSystems	Unidata
1996 revenue	\$40 million	\$50 million
Year founded	1978	1986
Number of employees	200	430
Key vertical markets	Health care and financial services	Manufacturing and health care
Technology differentiator	Multidimensional database tuned for transaction processing	Nested relational database that lets users store complex data

Database firms tout objects

By Craig Stedman

INFORMIX SOFTWARE, INC. may have made a big mess of its database business this year by pushing object technology too hard. But that isn't stopping other vendors from hopping on the object train.

Niche database companies InterSystems Corp. and Unidata, Inc. are getting into objects in an effort to expand their markets. The two makers of specialized transaction processing databases are both releasing new products that tap object technology to give users the means to build more complex applications.

Complexity is the key word

for users who have chosen InterSystems or Unidata over mainstream databases.

For example, Partners Health-Care System, Inc. runs its financial systems on standard relational software. But the Boston-based health-care provider relies on InterSystems' multidimensional database for more unwieldy clinical and administrative applications.

InterSystems "more easily models the real-world complexity" of applications such as surgical scheduling and ordering of medication or lab services, said Steve Flammini, corporate director of application development at Partners. The ordering

Object-based, page 66

Field workers get wired on management system

CONTINUED FROM PAGE 61

"When we apply herbicides to a right-of-way, we need to keep track of how many gallons we use and then write a report at the end of the year to the various environmental agencies," said Tom Mc-

Dermott, director of performance engineering. "It's a pain in the neck having to keep track of all that paperwork."

But now line workers carry handheld devices and simply load the information

into the devices as they work. PSDI's Maximo software tracks and logs herbicide use, compares the information with preset maintenance plans and alerts a user if it discovers inconsistencies.

Steve Clouter, an analyst at Automation Research Corp. in Dedham, Mass., said this type of product is of particular interest to companies that have geographically dispersed sites and need to closely coordinate maintenance work.

PSDI has released three applications, Maximo Procedure Builder, Maximo Rounds and Maximo Lockout/Tagout/Lineup (see chart, page 61), that can run on any Intel Corp.-based handheld devices, such as 3Com Corp.'s PalmPilot. All three applications are used to manage maintenance requirements.

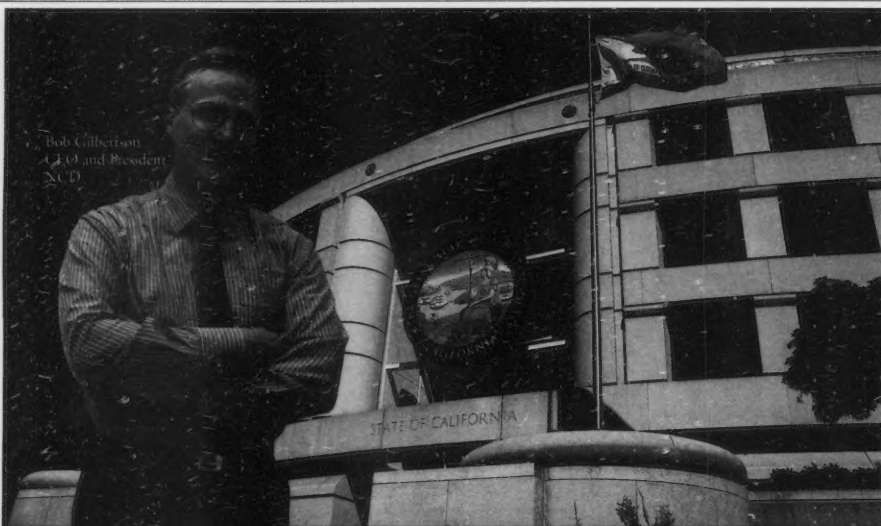
Clouter said the one feature missing from PSDI's package is a cellular or radio frequency communications system so that the information gathered on the road can be quickly downloaded into the main system. Now, users have to return to the office, hook the handheld devices to their desktop and download the information.

Indus International already has the radio frequency capability built in to its package. Its applications include maintenance management software and the ability to send real-time emergency dispatches from a site.

Ed Bice, transmission line supervisor at the New York Power Authority, also would like workers to communicate from the field. "So far, all we have done is captured information in the field on the handhelds," Bice said.

PSDI's system costs \$500 per application per device. Procedure Builder and Rounds are currently available. The third application is due later this month.

Indus International officials said the pricing of their product varies by the license but said it is competitive with PSDI. □



"With NCD, their network's in a great state."



THE CALIFORNIA HOUSING FINANCE AGENCY IS THE FIRST STATE AGENCY OF ITS KIND IN THE NATION TO USE THIN CLIENTS. THEIR CHOICE IS NCD.

Two years ago, the Agency was left with a mini-computer network by a company that had gone out of business and dumb terminals that needed replacement. They also had tons of legacy software and productivity apps on the mini. The database was ported to UNIX, so the path was clear - they wanted an X Windows environment working on a server with mouse-driven software.

"With NCD's network computers, we're able to run legacy apps, provide Windows apps running on NT, and allow end users to get to any platform and any environment they need easily and with a familiar look and feel" says Don Maio, CIO for the Agency. "End users seem to love it."

"In the beginning, cost per desktop was about the same as a PC, but in the past two years we've spent exactly zero on upgrades at the desktop level. And support costs - no comparison." With nearly 200 thin client devices in place, they have one system administrator and no dedicated help desk. The eleven people in Don's division simply field a low volume of calls as they come in. "That says something," added Maio.

What's next for this forward thinking State Agency. "With the help of NCD, we're delivering internet web browsing to every desktop. An agency-wide intranet will be in place soon after. End users can't wait."

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Network Computing Devices

"The Thin Client Company"

NEW PRODUCTS

LINCOLN BEACH SOFTWARE has announced Download Butler, a Windows utility that collects and categorizes files as they are downloaded from the Internet.

According to officials at the Ballwin, Mo., company, the software captures downloads in a tabbed notebook. It then categorizes information such as file names, file descriptions and World Wide Web site uniform resource locators.

Download Butler works with any browser and includes a built-in decompression utility that allows users to open and extract any file in an archive to a specified location and start the installation.

Download Butler costs \$29. Lincoln Beach Software (314) 861-1500 www.lincolnbach.com

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LTV Steel Company ROI=16,995%

As the third largest steel operator in the U.S., they've been using SAS software for data warehousing since long before the term was coined. According to Senior Statistician Robert Scharl, "SAS software is THE element of our data warehousing solution. It beat everything else for data retrieval...and it would have cost us maybe a half million dollars to bring something else in for a data warehousing system."

Phillips Petroleum Company Norway ROI=151%

As a leader in the high-stakes oil and gas industry, Phillips Petroleum relies on its SAS Data Warehouse for an up-to-date picture of company health and safety trends. "With the help of data warehousing, we have an overview of all the 'criticality' factors involved in the daily operation of oil producing platforms," says Incident Analyst Pål Navestad. "In addition, historical data makes a great contribution to cost-efficient design and redesign of our facilities. This knowledge tells us which preventive measures are most effective for increasing revenue and profitability. Quite simply, our SAS Data Warehouse helps to reduce injuries and saves money."

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www.novell.com/bordermanager

Novell®

BORDERMANAGER

Microsoft components

CONTINUED FROM PAGE 61

operating system through a Web browser. The applications themselves won't be able to run on non-Windows platforms, but they will have a dynamic Hypertext Markup Language-based interface that a browser can access.

USER PRESSURE

Microsoft is responding to market demand, said Karen Boucher, an analyst at The Standish Group International, Inc. in Dennis, Mass. "Microsoft is getting pressure from its customers to be cross-platform. The more pressure, the more chance they'll actually [go] cross-platform," she said.

David Lazar, lead product manager for Microsoft's visual tools, acknowledged as much.

"It's reality. We're not going to move people to Windows NT databases overnight," he said. Meanwhile, Microsoft's move will make it possible for users of Internet-based applications to access data now on mainframes and Unix systems.

The components that will be tied more closely into Microsoft development tools include OLE DB, Active Data Objects and the Open Database Connectivity (ODBC) standard. Active Data Objects is a high-level programming interface that makes it easier to set up the access channels. ODBC is a lower-level connection technology that can access data on various databases. OLE DB does the same thing, but it also gives access to nonrelational data sources, such as object-oriented databases and mainframe flat files, which previously were inaccessible through ODBC alone.

"Right now, each data source needs to be wrapped a different way," said Dave Lingren, director of advanced development at DunsGate, the information technology arm of Dun & Bradstreet Corp. in New York.

"OLE DB gives you a standard so everything has one way of asking for data from all the different sources. That's one of the most important things to me," he said. □

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I certify that the statements made by me above are correct and complete.

Pat Walker
Traffic Manager

Corel, Lotus try to keep hold in 16-bit market

CONTINUED FROM PAGE 61

desktops that still run 16-bit applications, say they aren't so sure Corel and Lotus have hit the bull's eye.

"You're talking about a class of folks who just doesn't buy anything. The whole point of them staying 16-bit is that they don't want to do anything. It's a fairly limited opportunity," said Rob Enderle, a software analyst at Giga Information Group in San Jose, Calif.

According to PC Data, sales of office suites for Windows 3.1 have plummeted, while Windows 95 sales have taken off.

Both Corel, in Ottawa, and Lotus, in Cambridge, Mass., emphasize Internet connectivity and World Wide Web authoring tools in their new suites for the 16-bit Windows 3.1 crowd.

Corel released Corel WordPerfect Suite 7 for Windows 3.1 and a 16-bit edition for the legal community in August. It said it was responding to the large user base of Windows 3.1 users.

Steve Bush, manager of systems and networks at Harris Chemical Group in Overland Park, Kan., said he was glad

someone was still developing for Windows 3.1. "We're pretty excited about it. There's a lot more Web publishing features that we really need," he said.

Bush said his firm is upgrading about 600 Windows 3.1 seats from WordPerfect 6.1 to WordPerfect 7.0. Eventually, however, Bush said he figures the lack of software companies developing 16-bit applications will force Harris Chemical to move to a 32-bit version of Windows.

The 16-bit version of SmartSuite nearly mirrors the feature set of Lotus' 32-bit SmartSuite 97 application. For example, from within the WordPro word processing program, users can perform Web searches and can save documents as Hypertext Markup Language files.

Still, the sales weren't there. Market research firm PC Data in Reston, Va., says sales of office suites for Windows 3.1 have plummeted, while Windows 95 sales have taken off. In the 16-bit world, Lotus sold about 43,000 copies of suite software in 1995, about 25,000 last year and just 5,000 copies so far this year.

Corel's sales of Window 3.1 office suites went from about 173,000 last year to about 44,000 this year. That put Corel just behind Microsoft, which has sold 47,000 copies of its 3-year-old Office suite Version 4.3 this year. □

Object-based technology

CONTINUED FROM PAGE 61

system would need to fetch information from 750 different database tables with relational software, he said. "Performance-wise, that just wouldn't work," Flammini said.

Partners, which runs two major hospitals and a network of 800 doctors, already wrote its own software for converting InterSystems data into reusable objects and components that can streamline development and support more complexity.

"But I'd much rather that they develop the tools for me," Flammini said. A pilot application using InterSystems' new object extensions is planned for next year.

PRODUCT RELEASES

InterSystems, in Cambridge, Mass., last week released an object-enabled upgrade of its OpenM database and renamed it Cache. The product supports Java, ActiveX and C++ and also includes a SQL interface for getting at information stored in relational databases. Per-user pricing ranges from \$125 to \$1,000.

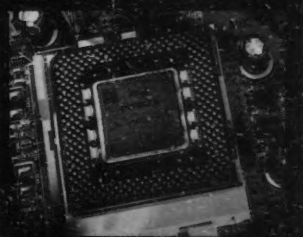
Denver-based Unidata this week plans to introduce a stand-alone object data-

base that it obtained via an acquisition. O2 Version 5.0 can be hooked to the company's relational database, which lets users "nest" multiple pieces of data in tables to cut down on joins. Shipments are due late this month, with development licenses starting at \$4,000.

Vertical Technologies, Inc., a Calgary, Alberta, developer, plans to use O2 to store legal documents and written notes that could be linked to its Unidata-based accounting application for lawyers. That would let users "tie together all the legal components of a case with all the back-office information," said David Hanowski, vice president of research and development at the company.

For WCA Healthcare System, Inc., an InterSystems user in Jamestown, N.Y., the object features of Cache hopefully will help make it easier and faster for doctors and administrators at its hospitals and clinics to call up medical records and other patient data.

"Our application is massive, and I don't think patients want a computer to hold things up," said Sandra Swanson, director of information systems at WCA. □



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Servers & PCs

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Briefs

HP uses Intel spec

Hewlett-Packard Co. plans to support Intel Corp.'s Wired for Management specification in its line of Vectra PCs. The specification will give users standard instrumentation, remote boot ROM and PC wake-up features.

Officials at the Palo Alto, Calif., company last week said HP will integrate Wired for Management features with its commercial workstation. Both PCs and workstations will be ready to plug in to HP's OpenView network management software.

StorageTek movie deal

DreamWorks SKG, the Los Angeles movie studio co-founded by director Steven Spielberg, recently bought Storage Technology Corp.'s MediaVault tape library to store digital animation from its feature films.

StorageTek, in Louisville, Colo., developed MediaVault specifically for the broadcasting industry. The company leads the high-end tape storage market.

Dell notebooks

Dell Computer Corp. in Round Rock, Texas, last week rolled out two Inspiron 3000 notebooks that use 166- and 200-MHz Intel Pentium processors with MMX technology.

The Inspiron 3000 M166ST features 16M bytes of RAM, a 2.1-G-byte hard drive and Microsoft Corp.'s Office 97 suite. Pricing for that model starts at \$2,999. Both models come with a 12.1-in. matrix screen.

Explora thin client

Network Computing Devices, Inc. has announced a family of thin-client desktop devices that are aimed at the character-based terminal replacement market.

The Explora 400 Series is based on the 33- and 66-MHz PowerPC processor and can be used to access Windows, Unix, legacy and Java applications. Pricing starts at \$700.

Timing is key to IT discounts

By Jaikumar Vijayan

CALL IT A MATTER of timing, but when you make your information technology purchases is becoming almost as important as what you buy.

And that rule applies to more than just hardware acquisitions.

Savvy corporations that want to shave dollars off their procurement budgets or negotiate better terms on their purchases are waiting for fiscal year endings and quarter endings to drive good deals from

their hardware, software and service vendors.

That may include getting price reductions of 20% to 30% on hardware and software purchases, more bundled features, steep discounts on future purchases and better licensing and maintenance terms.

LAST-MINUTE DEALS

Most vendors are trying to clinch as many deals as possible during the closing weeks of a financial cycle to meet preset sales targets.

Some experts figure that

Making quarter-end purchases could help users negotiate:

- Reduced hardware and software costs
- Discounts on future purchases
- Lower licensing costs
- More maintenance at the same price
- Extra features

many companies make as much as 25% of their annual sales in the last month of their fiscal year. As a result, they are more open to negotiations during this period than at any other time of year,

observers said.

The best times to drive such bargains are at the end of a fiscal year, at the end of a quarter and at the end of a month, said Joe Auer, president of International Computer Negotiating, Inc., a consultancy in Winter Park, Fla.

"Somebody is always putting pressure on the sales force to get more bookings into this sales period. Many times, what [a salesperson] earns is absolutely tied to this year's performance. Enlightened users will take advantage of this situation," Auer said.

His advice to corporations: Make sure you know your vendor's fiscal year end, prepare negotiating objectives in advance and be ready to do business in the closing weeks

Timing, page 72

Tiny PDA steps up to challenge PalmPilot

REX PC COMPANION

Weight: 1.4 ounces

Capabilities: Download names, phone numbers, to-do lists and calendar from a PC

Features: Personal information manager and Starfish Software's TrueSync software

Price: \$129.95 for Rex-1 (stores up to 750 items); \$149.95 for Rex-3 (stores up to 2,500 items); \$39.95 for docking station

By Kim Girard

3COM CORP.'s popular PC companion PalmPilot now has a little competitor named Rex.

Rex, from Franklin Electronic Publishers in Burlington, N.J., introduces a low-end device to the personal digital assistant (PDA) market. It weighs just 1.4 ounces and is about the size of a credit card. It is much smaller than the 6-ounce PalmPilot.

Users said they are impressed by the convenience of the tiny Rex but said they wonder whether it is as useful as PalmPilot.

"If I can't modify my schedule or add a phone number or a to-do list item, it really detracts from the functionality of the device," said Tom Tracey, a systems officer at PNC Bank Corp. in Pittsburgh. "Interactivity is a

requirement as far as I'm concerned."

But Joe Custer, a sales direc-

tor at Chromatic Research, a multimedia products company in Sunnyvale, Calif., said he would consider dumping his PalmPilot for a Rex.

Custer said he has broken the screen on the front of his PalmPilot several times. He said he likes the idea of a smaller device with an LCD display.

"I could put that in my wallet," Custer said.

Rex users can download data from a PC by sliding the device into a PCMCIA slot or by attaching a docking station to a serial port on the device.

The system uses TrueSync from Starfish Software, Inc. in Scotts Valley, Calif. The program downloads appointments or telephone numbers from personal information managers, including Microsoft Corp.'s Outlook and Lotus Development Corp.'s Organizer.

Besides the LCD screen, Rex has five buttons for accessing data. There is no stylus. A row of icons at the bottom of the screen point the user to different data screens, such as a scheduler and address book.

PDA, page 72

Compaq rolls out made-to-order PCs

Compaq Computer Corp. this week will roll out machines based on a new made-to-order manufacturing process.

Officials at the Houston-based company last week said Compaq will start with its corporate Deskpro line, which has three models — from low-end to high-end machines.

In anticipation of its product launch, the company also reduced by about 15% the prices of its older Deskpro models.

Analysts said the move toward

the build-to-order process will help Compaq compete with rival Dell Computer Corp. in Round Rock, Texas.

Dell has enjoyed a 15% price margin advantage over indirect vendors such as Compaq. Under Compaq's indirect sales model, the company had to forecast inventory requirements as much as a year in advance to keep resellers' channels stocked with machines.

With a build-to-order system, Compaq will be able to cut costs

by holding inventory for less time. The company also plans to offer more flexible desktop configurations.

New models available this week include the Deskpro 2000, 4000 and 6000. They all feature Intel Corp.'s Pentium II processors, ranging from 233 MHz to 300 MHz. And they come preloaded with Microsoft Corp.'s Windows NT Workstation 4.0. Prices range from \$1,739 to \$2,399. □

— April Jacobs

Tiny PDA stands up to PalmPilot

CONTINUED FROM PAGE 71

Andrew Seybold, a mobile computing analyst and editor of "Andrew Seybold's Outlook" newsletter in Boulder Creek, Colo., said PalmPilot users who don't use Graffiti — the PalmPilot's handwriting recognition system — or who don't need to change appointments or addresses on the fly, may prefer the pared-down functionality of the Rex.

Rex users can download data from a PC by sliding the device into a PCMCIA slot or by attaching a docking station to a serial port on the device.

"It does what I want it to do without the bulk of the Pilot," said Seybold, referring to the address book function.

Rex, which is shipping now, comes in two models. Rex-1, which stores up to 750 items such as addresses or appointments, costs \$129.95. Rex-3, which stores 2,500 items, costs \$149.95. The docking station costs \$39.95. □

Timing is key to IT discounts

CONTINUED FROM PAGE 71

of a cycle.

"Whenever we took advantage of it, we found that the vendor was willing to go the extra mile. They wanted to give you the extra discount and the extra freebie because they were nervous and they wanted to make their quotas," said Terry Nasr, a senior contract specialist at the Washington Suburban Sanitary Commission in Laurel, Md.

There are times when the commission isn't ready to make purchases toward the end of a quarter, Nasr conceded. "But 90% of the time, we found that we could get a similar deal

at the end of the next cycle," she said.

Users such as Nasr said there is more negotiating room with software purchases.

But users can get good deals on hardware, too.

"We found that we got a few extra bells and whistles when dealing with a vendor at the end of a year. There was a tendency on their part to negotiate," said Ray Mark, a sourcing specialist at Mobil Corp. in Fairfax, Va.

He was referring to his experience in dealing with hardware vendors in his previous job at a manufacturing firm.

By Joanne Taaffe

WITHIN THE NEXT five years, IBM will build all its microprocessors using a new manufacturing process that depends on copper instead of aluminum to build transistors, said Michael Attardo, general manager of IBM's microelectronics division.

Attardo spoke last week in Paris at the opening of a production line for 64M-bit dynamic random access memory (DRAM) chips.

NEW TECHNOLOGY

IBM's manufacturing technology is called CMOS 7S; CMOS stands for complementary metal oxide semiconductor.

By using copper in its manufacturing process, IBM can make smaller, faster chips and eventually cut the cost of chip manufacturing by 15% to 20%.

— Michael Attardo, IBM

CMOS 7S lets IBM draw on copper's ability to conduct electricity better than aluminum — the metal normally used in chip construction — while

insulating copper wires to prevent its tendency to fuse with silicon.

This process means IBM can make smaller, faster chips and, according to Attardo, eventually cut the cost of chip manufacturing by 15% to 20%.

The company plans to phase out aluminum and use copper in all of its chips by 2002 or 2003, Attardo said.

CMOS 7S chips will move into mass production next year, and IBM initially will concentrate on using copper to make microprocessors and static RAM.

The first IBM systems to use the new chips will be IBM's mainframes and high-end servers, such as next year's AS/

400 and RS/6000 machines, Attardo said.

Attardo said he would like to see a rise in the number of chips sold for consumer communications products. That area currently accounts for 10% to 15% of IBM's chip sales.

Attardo said he wants that to grow to 30% to 40% in coming years.

IBM's Corbeil-Essonnes semiconductor plant outside Paris has 3,600 employees and 200,000 square meters of building space and is the biggest semiconductor plant in Europe, according to officials at IBM. □

Taaffe writes for the IDG News Service in Paris.

Apple pulls PowerPCs

By IDG News Service staff

APPLE COMPUTER, INC. is taking its high-end PowerPC desktop system off dealer price lists because of a shortage of 604E microprocessors, a spokeswoman said. The move affects 9600 models that use 350-MHz processors.

The Cupertino, Calif.-based company will continue to fill the orders that have been taken but will stop taking orders, possibly indefinitely, according to Apple spokeswoman Diane Hayward.

"We're still producing the systems as they get the chips to us," Hayward said. "We decided

to stop taking orders rather than having customers wait and have that delta continue to grow. They may go back on the price list and may not."

Hayward said she couldn't say how many systems are on back-order or discuss how many 604E processors Apple is receiving.

Officials at IBM, which makes the microprocessors, couldn't be reached for comment.

Meanwhile, Apple is recommending a replacement for customers who want to order the systems — the 9600 models that use 300-MHz processors, Hayward said. □

SHORTS

Intel acquisition

Intel Corp. last week acquired privately held Corollary, Inc. in Irvine, Calif., a developer of multiprocessor server technology. Financial terms of the deal weren't disclosed. Intel officials said it is aimed at accelerating the production of eight-way servers based on Intel's Pentium Pro processors. Corollary will retain its name and identity. The company will become a wholly owned subsidiary of Intel.

Iomega files suit

Iomega Corp. filed suit against Noma SA, a French maker of digital storage products. The lawsuit alleges unfair competition and patent infringement related to a storage diskette launched by the French company earlier this month. The complaint, filed recently in the District Court in Paris, concerns Noma's HXD 100M-byte SuperFloppy diskette. The suit is the latest overture in an ongoing legal wrangle between the two companies. Noma, which couldn't be reached for comment, is marketing the diskette as being fully compatible with Iomega's Zip drive. Iomega disputes the manufacturer's claim.

Motorola chips

Motorola, Inc. last week said it has developed a technique that replaces aluminum wiring with copper interconnects in integrated circuits. That will result in smaller, faster chips for devices such as handheld computers. The process takes advantage of copper's property of conducting electricity better than aluminum and copper's greater resistance to electromigration, Motorola officials said. The copper interconnect technology can support 50 million to 100 million devices on a chip, officials from the company said. IBM recently said it will also use copper to make faster processors (see story above).

Nielsen tracking

Nielsen Media Research, widely known as the company that tallies TV ratings, said it is recruiting home PC users and testing software that will track consumer Internet and PC use. New York-based Nielsen has signed several hundred home PC users and hopes to increase its sample size to about 10,000 by early next year. Nielsen hasn't set a date to launch the ratings service, which would compete with several other services that measure World Wide Web audiences.

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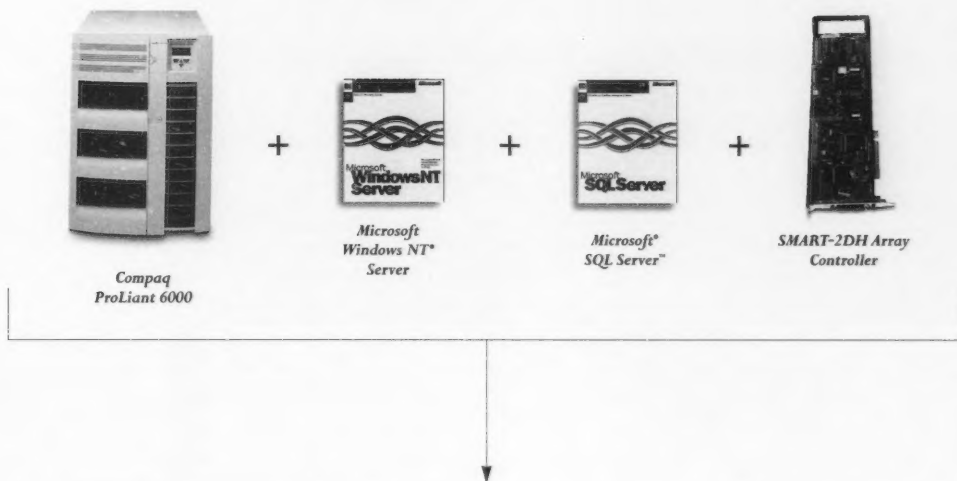
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NEW PRODUCTS

MICRO DESIGN INTERNATIONAL, INC. has announced the CD-Express Connect, a LAN-attachable CD tower with seven 12-speed CD-ROM drives.

According to the Winter Park, Fla., company, the tower offers CD-ROM access over 10Base-T Ethernet or Token Ring connections. It has a 32-bit RISC processor and 32M bytes of cache mem-

ory. It supports many clients, including Windows, Unix and OS/2, along with World Wide Web and intranet clients.

Pricing starts at \$3,995.

Micro Design International
(407) 677-8333
www.mdi.com

SEAGATE TECHNOLOGY, INC. has announced

a line of Barracuda disk drives.

The Scotts Valley, Calif., firm said the 3.5-in. desktop drives come in three capacities: 18G bytes, 9.1G bytes and 4.5G bytes. Interface options include Ultra SCSI, Ultra SCSI2 and Fibre Channel.

The 18G-byte drive costs \$1,745, the 9.1G-byte drive costs \$1,080, and the 4.5G-byte drive costs \$690.

Seagate Technology
(408) 438-6550
www.seagate.com

IMPERIAL TECHNOLOGY, INC. has announced the MegaCache 4000, a table-top or rack-mount caching system for improved I/O of storage units.

According to the El Segundo, Calif., company, the system's two 100M byte/sec. internal buses make data stored on disks available to the host in 0.1 msec, or 1/100 the time taken by conventional disks. Users can connect host computers and SCSI disk drives or RAID arrays to up to 12 Ultra SCSI ports on the MegaCache 4000. Cache capacity ranges from 268M bytes to 8G bytes.

Pricing starts at \$25,000.

Imperial Technology
(800) 451-0666
www.imperialtech.com

LANART CORP. has announced the LANart 10/100 Fiber NIC, an Ethernet/Fast Ethernet adapter for fiber network connections at the desktop.

According to the Needham, Mass., company, the network interface card (NIC) can access data through two fiber connections. If one connection fails, the adapter card automatically moves to the second connection. LANart 10/100 was designed for migrating to Fast Ethernet, while keeping the old Ethernet infrastructure as a redundant network.

The product costs \$549.

LANart
(617) 444-1994
www.lanart.com

CHEM USA CORP. has announced ChemBook 2700, a multimedia notebook with a 16-bit stereo sound card, a 64-bit graphics engine, two stereo speakers and a built-in microphone.

According to the Newark, Calif., company, the notebook has a 14.2-in. screen, one of the largest displays available. The base model has a 120-MHz Pentium processor, 16M bytes of RAM, a 1.4G-byte hard drive and a 20-speed CD-ROM drive. Users can upgrade to 233-MHz processors, 128M bytes of RAM and 3G-byte hard drives.

Pricing starts at \$3,300.

Chem USA
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www.chemusa.com

AXIL COMPUTER, INC. has announced the Ultima 2, a SPARC-based workstation with dual processors.

According to the Santa Clara, Calif., company, the system has two 64-bit UltraSPARC II processors that each range in performance grades from 167 to 300 MHz. Workstation configurations include 128M to 2G bytes of RAM, a hard drive capacity up to 18G bytes and the Sun Microsystems, Inc. Solaris operating system.

Pricing starts at \$13,660.

Axil Computer
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www.axil.com

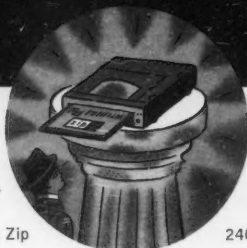
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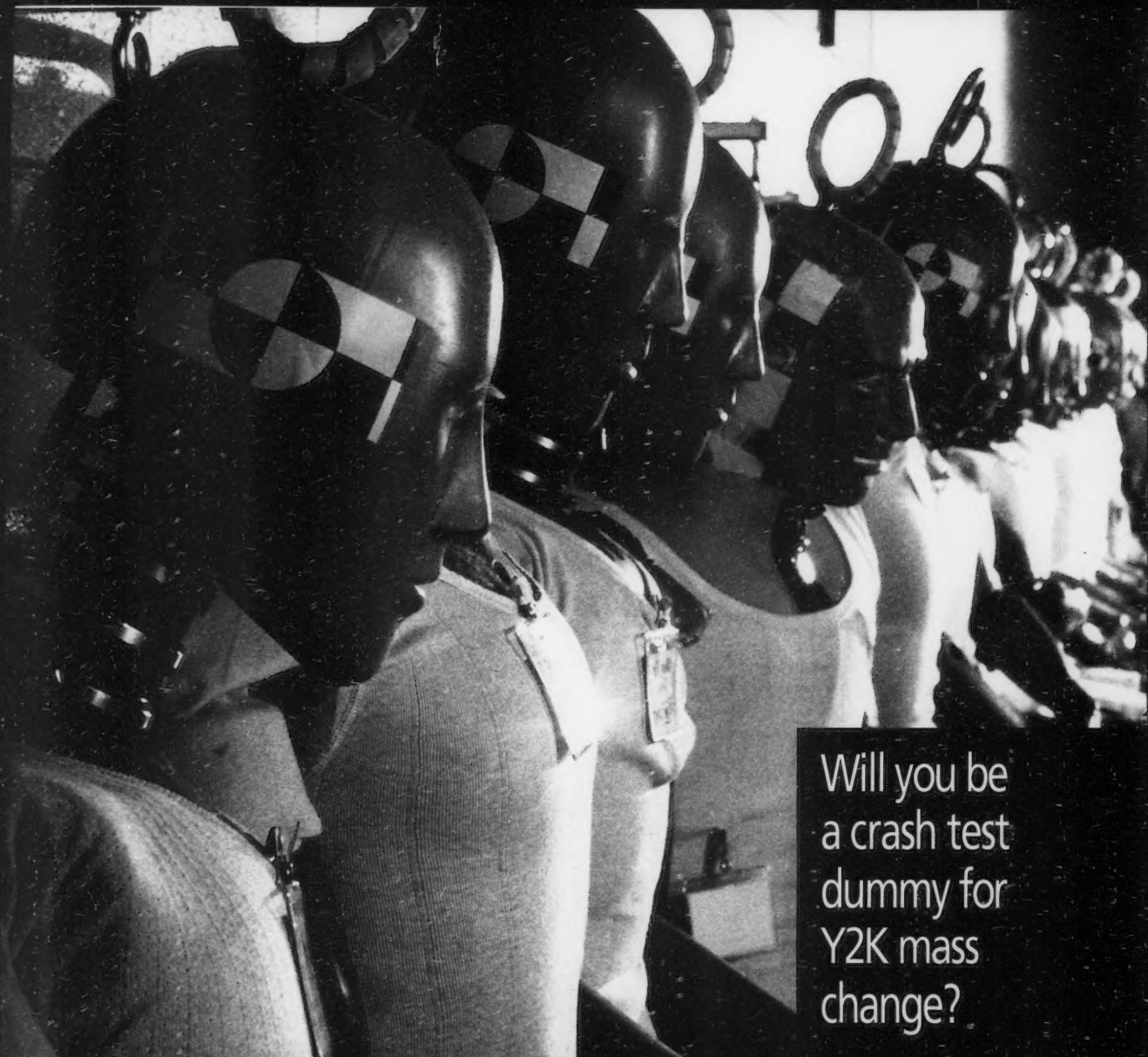
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Managing

It's a big IT project, and your business unit wants it done in two months. You nod, but privately you wince. You'll need twice as long to get the job done right. It's moments like this when you have to know how to be a ...

Captain of CRUNCH

BY ROCHELLE GARNER

Spell out the risks of a tough project to top-level executives, says Ron Caruana, IT director at GTE Telecommunications Services, Inc. in Tampa, Fla. The can leave you standing tall rather than the falling crunch.

Here's an interesting tidbit: The word "deadline" originally referred to a line drawn around a military prison, beyond which prisoners were summarily shot.

By the way, how is that crunch project coming?

If you're like most people who oversee information systems projects, deadlines today can seem almost as threatening as those early lines drawn in the dust. Granted, you won't be dodging lead. But when a project's bullets are forged from internal politics, unreasonable expectations and unforeseen slipups, those crunch schedules — when you're leading projects in which you're given less time than you'd like to get them done right — can become dangerous to your career.

But the situation doesn't have to be hopeless. The trick, say those who've lived through deadline hell, lies in knowing what and how to negotiate with the corporate chiefs who started the project.

"You don't have to sign up for a death march," says Ron Caruana, director of information technology at GTE Telecommunications Services, Inc. in Tampa, Fla. "You do have to identify the alternatives and the contingencies for things you

Captain of crunch, page 82

BRUCE TATUM

Captain of CRUNCH

CONTINUED FROM PAGE 81

know are risky, and you have to let the top-level executives know what those risks are."

YOU WANT IT WHEN?

The first risk to negotiate: the deadline itself. Sure, tight schedules often are dictated by legal, regulatory and market factors. They can't be pushed back. But some deadlines seem almost arbitrary — as if an executive chose a date simply by throwing a dart at a calendar. Those not only can be negotiated, they must be.

Yes, that takes courage. No, it isn't a mark of personal failure — if you show executives early in the process how impossible your deadline is. "Crunches normally happen when executives dictate the final date for a project, rather than ask when it can be done," says Doug DeCarlo, project management consultant and coach at ICS Group, a project management consulting firm in Norwalk, Conn.

"We advise our clients who can use project management software to schedule the project backward from the finish date — identifying the phases, milestones and tasks — and let the software schedule the project with reasonable estimates," DeCarlo says. Such software includes ABT Corp.'s ABT Workbench and Primavera Systems, Inc.'s Primavera Project Planner. "If the software shows the project would have had to start sooner than it was even assigned, the leader has a pretty convincing presentation in the form of that illustrated printout."

When you make that presentation, it behooves you to suggest alternatives. Say the deadline can't be moved. Hiring temporary help, at a cost of X thousands of dollars, could make the date. Not an option? Then consider a phased approach — breaking the project into chunks and delivering, on schedule, only those phases the business must have first.

"Requirements management is critical to success," Caruana says. "There's a tendency for people to want everything now. But if chunking a project satisfies market requirements, it's a no-brainer for managing the crunch times."

Remember that suggestion. It's perhaps the best way to compress time throughout most of a project's implementation cycle. The key, though, is making sure that the business side decides how the project can be divided. IS's responsibility lies in knowing the company's business well enough to suggest chunks that jibe with customer or market requirements.

Just be aware that this takes political skill. "Parsing a project requires real political savvy because, if you chunk a proj-

ect into four pieces, the person with a stake in the fourth chunk usually goes ballistic," says Gopal K. Kapur, president of the Center for Project Management in San Ramon, Calif. "That fourth-chunk person wants to know why his part of the project has to come last. That's why we involve politically savvy IT people and businesspeople to do the chunking."

And speaking of office politics: Just how are you supposed to deal with the inevitable delays caused by political bickering, turf wars and team members over whom you have no direct control?

The answer lies in the management process you've so painstakingly laid out and documented. No, this isn't the critical path method or PERT plan that detail which tasks must be done and when. Such plans — although vital for overseeing complex projects — don't define the personal interactions, authority and communication intended to remove the ugly obstacles that invariably rear up from internal politics. For that, you also need a well-defined process that's been agreed upon by the upper echelons.

PROCESS, PROCESS, PROCESS

"This is so basic [that it] is almost embarrassing to articulate," Caruana says. "The very first thing a project manager has to do is make sure people understand the project management process their company embraces: how work is introduced, how it is planned, how contentions are resolved and how the cross-functional project managers work with the functional managers to deliver."

That's right, more up-front work. But without it, a project

manager has no real authority to deal with anyone.

That's because the management process also defines the manager's authority — even over staffers who report to a different functional manager.

And what happens when conflicts arise among managers too high for you to command?

Just turn to the well-documented process to see which high-level executive has

so far applies to any project, regardless of size. Where things differ, though, is when projects have the prefix "mega" tacked onto them.

"Compressing time is different for large projects than for medium and small projects," says David H. Starr, chief information officer at The Reader's Digest Association, Inc. in Pleasantville, N.Y. Starr's list of megaprojects includes a monster: Citicorp's Integrated Systems

Project, which tied together 43 systems with 2 million lines of executable code.

"If you use what's laid out for medium projects, everything will collapse under its own administrative weight," Starr says. One recommendation: Don't try to do everything yourself. Instead, assign high-level staffers to oversee project administration, for example, and data conversion.

And yes, everything has to occur at practically the same time.

"You simply have to have more concurrency of tasks, maybe defining one piece while you're developing another," Starr says. "The other secret is to break up big projects into little projects, especially if you can set them up for a little bit of competition."

ONE AGAINST THE OTHER

That's right, competition — but not staff against staff so much as consultants against vendors. "I love pitting consultants and vendors against each other and letting each one watch what the other is doing. That way you can say, 'This is what the other guy is going to produce. Can you beat it?'" It raises the denominator for the whole project."

Clearly, Starr is an experienced project manager who can meld business acumen with project oversight. But what happens when someone with only technical expertise must oversee a project? "Taking a perfectly good technical person out of their element and making them in charge of a project has produced the worse outcomes I've ever seen," Wolleat says. "The only help is to get them a mentor."

Kapur adds, "When business projects are put under the control of IT people, they are headed for failure. It's an untenable position to be in."

So what should you do if you find yourself in such an untenable position?

Beg for a mentor or a consultant, if you can. Ask to be taken off as lead project manager, if that fails.

Because if you don't understand project management and lack the political clout to get things done, you could very well end up crossing that imaginary line in the dust.

Boom. □

Garner is a freelance writer in San Carlos, Calif.

Why projects fail

Gopal K. Kapur, president of the Center for Project Management, has a list of "Management's Seven Deadly Sins — Why Projects Fail."

1. Mistaking half-baked ideas for viable projects.
2. Dictating unrealistic project deadlines.
3. Assigning underskilled project managers to highly complex projects.
4. Not providing solid business sponsorship.
5. Failing to break projects into chunks.
6. Failing to institute a robust project process.
7. Not factoring in the competing demands of other projects.

been designated to smooth out contentious behavior among those particular departments. It's called "escalation."

"If you never have to escalate, you're either a poor manager or someone treats you as a god," says Jillayn Wolleat, a former project manager who now is a project management consultant in the Atlanta office of consultancy Computer Task Group. "I don't know a single project manager who hasn't had to escalate. I put it as part of the communications procedures in the project plan."

Everything everyone has talked about

"Taking a perfectly good technical person out of their element and making them in charge of a project has produced the worse outcomes I've ever seen," says project management consultant Jillayn Wolleat. "The only help is to get them a mentor."



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The sweet scent of SUCCESS

Everything's coming up — well, you know what — at 1-800-FLOWERS' interactive division. But it takes a diverse approach to IT training to make everything bloom just right

By Alice LaPlante

WHEN LISA GARAFOLO graduated from college last year with a computer science degree, she was delighted to land a job in the hottest information technology career track: electronic commerce.

But as operations coordinator in the interactive division at the world's largest florist, 1-800-FLOWERS, Garafolo found herself doing things she never would have anticipated: answering telephones, assembling gift baskets and giving customers advice on what kinds of flowers to send on Mother's Day.

"I'd expected to be more of a traditional systems analyst. But I love this job," she says.

Does Garafolo, who has invested years preparing for a technical career, resent what might be viewed as a lack of job focus?

"Not at all. I've just learned that the technology by itself isn't important. It's how you apply it that counts," she says. "This is how I plan to build my career."

HELP WANTED: RENAISSANCE MEN AND WOMEN

The firm's multitrack training program, called "Floraversity," was designed to make employees experts in many areas.

The premise behind Floraversity is that even though an employee has a primary job responsibility within a certain function, he will be called upon to exercise knowledge of the floral industry and 1-800-FLOWERS in particular, says Neil Halloran, director of corporate training.

And IT workers such as Garafolo who have gone through Floraversity will find themselves increasingly valuable at a company where customer and business needs come first and drive IT initiatives.

So, rather than resenting the time spent in horticulture classes, Garafolo and her colleagues are more likely to find that the knowledge will be key to career success, says David Foote, author of a Meta Group, Inc. report on IT careers and managing partner at Cromwell Partners LLC, a Stamford, Conn., IT staffing consulting firm.

Garafolo is responsible for the content of the firm's sites on the World Wide Web, America Online and The Microsoft Network. She makes sure that product information and all editorial, reference and graphic materials are accurate,

up-to-date and interesting enough to keep customers coming back. She works with interactive division teammates to make sure online orders are processed swiftly and accurately, customers' problems and inquiries are answered immediately and that all other parts of the electronic sales cycle run smoothly.

Garafolo spent her first weeks on the job learning every aspect of the floral business: arranging bouquets at a retail store, taking customer orders and tracking fulfillment of those orders via 1-800-FLOWERS' global distribution network. She completed training that immersed her in everything from Hypertext Markup Language and Rainman, AOL's proprietary programming language, to how to care for exotic flowers. And on holi-

days, just like everyone else at 1-800-FLOWERS, Garafolo stops what she's doing and answers the phones.

Those varied skills have turned out to be critical. That's why Donna Lucolano, director of the Interactive Services Division, rates 1-800-FLOWERS' cross-functional training program so high.

Lucolano oversees a staff of 15 full-time employees. Most, like Garafolo, hold traditional computer science degrees. There are also workers who have earned MBAs, as well as marketing professionals and employees promoted from one of the telecenters or other operational areas.

Regardless of their areas of expertise, all employees need to be cross-trained in every aspect of 1-800-FLOWERS' business, Lucolano says.

"Interactive activities cut across all

Since graduating from college last year and landing a job in electronic commerce, Lisa Garafolo has had a flourishing career at 1-800-FLOWERS. But her job also entails non-IS work, such as answering phones and arranging floral baskets. And that helps her learn how to apply technology.

functions," she says. "The only way to succeed is if my employees understand the whole business cycle."

Indeed, technology-savvy repeat customers such as Lana Mountford say that attitude makes all the difference.

Mountford, an analyst at Stanford University's IT department, lives in a remote Pacific coast town and has little time to go to stores. So she goes online. Mountford estimates she racked up Web purchases of between \$12,000 and \$16,000 last year. She gives 1-800-FLOWERS high marks, mostly because the technology is so skillfully integrated into an understanding of what the customer wants.

"They include quality photographs and detailed descriptions of products. There's also a terrific variety of choices," she says. Mountford also is impressed by the technical standards. "The graphics load very quickly [and] the links are always functional," she says. Perhaps most important, there's a personal touch to the site design that could have come only from intimate knowledge of the business, she says.

"You get the same feeling logging on to their online store as you would get calling them on the phone or walking into a retail florist," Mountford says.

Too many retailers put up Web pages designed by technical specialists "who don't know anything about marketing or about the kinds of customers who will be visiting the site," says Matthew Kinsman, an analyst at Cowles/Simba Information Services in Stamford, Conn. "1-800-FLOWERS has a well-thought-out online strategy that recognizes the personal touch is critical, especially to get the repeat customers." □

LaPlante is a freelance writer in Woodside, Calif. She can be reached at alaplante@aol.com.

Facts on 1-800-FLOWERS

BASE: Westbury, N.Y.

WHAT: The world's largest florist with 130 company-owned retail stores and 2,500 "partner" florists. Online stores are at America Online (keyword: flowers), The Microsoft Network (in The Plaza) and the Web (www.1800flowers.com).

FINANCIALS: This year's revenue is projected to be \$300 million; online revenue will account for 10% of that. Last year, there were about 9 million purchases of flowers via all channels.

INTERACTIVE SERVICES DIVISION: Established in 1992 to pursue nontraditional opportunities using emerging technologies, the division employs 15 workers who have a mix of technical, operations, marketing and horticultural skills.

ONLINE AWARDS: Gold Site (NetGuide); 100 Top Cyberstores, five out of five stars (PC Computing); A "Must-See Site," four out of four stars (Excite); three out of four stars (Magellan).

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- 23. Dir./Mgr. Sys. Development, System Architecture
- 31. Programming Management, Software Developers

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- 90. Other Titled Personnel

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- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

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- 50. Business Service (except DP)
- 60. Government - State/Federal/Local
- 65. Communications Systems/Public Utilities/Transportation
- 70. Mining/Construction/Petroleum/Refining/Agriculture
- 80. Manufacturer of Computers, Computer-Related Systems or Peripherals
- 85. Systems Integrators, VARs, Computer Service Bureaus, Software Planning & Consulting Services

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- (b) NetWare (f) Windows NT
- (c) OS/2 (g) Windows
- (d) Unix (h) NeXTStep

App. Development Products

- ☐ Yes ☐ No

Networking Products

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Intranet Products

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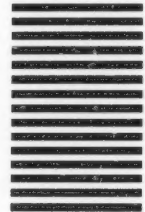
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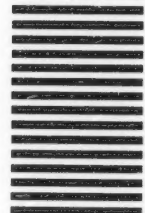
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top, thief!

LEILANI ALLEN

The cry evokes the image of a stranger. But what if the thief is a valuable employee?

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HOW DO YOU STOP A THIEF?



What does a manager do when theft is homegrown?

Company A, a small software services firm, wanted to keep "administrivia" to a minimum, so it kept a room stocked with supplies. Staffers could walk in and take what they needed. Besides paper clips, tape and other standard supplies, toner cartridges, power strips, mice and other devices were kept in stock.

Over the months, supply costs began to increase significantly. Management concluded that things were being stolen and issued a memo that stated one or more individuals were stealing from the company and that strong actions would be taken. The supply room was locked, and employees had to ask the president's secretary for a key whenever they wanted access. There was no access after hours and on weekends.

About three weeks later, the staff discovered that someone had cleaned out more than a dozen offices over the weekend. Some equipment was stolen, but mostly people lost personal stereos, CDs, clocks and similar items. Because there was no evidence of a break-in, the police concluded it was employee theft. New locks were installed on the outside doors, but otherwise, no further action was taken.

The thefts didn't continue, and the culprit was never caught. No one knows if the timing of the theft was a coincidence or if it was motivated by the new policy.

Another situation took place several years back, before the advent of laptops. Company

B, a hardware firm, had employees in several offices across town. Like many such firms, it had a room set up for customer demonstrations and training, and many employees routinely carried equipment back and forth among the various buildings. Equipment began disappearing from the demonstration room: first a printer, then a

large-scale display unit, a PC and a projection device. The firm alerted its managers to the situation, but no one could offer any explanation.

Finally, a special camera installed in the demonstration room caught one of the senior engineers blithely removing a PC. The individual was summarily dismissed, and word was passed that the culprit had been found. No formal announcement was made to the employees, but they soon realized one of their colleagues was gone.

The fired engineer was very upset and asked to speak to his manager. He admitted taking the equipment but said that it wasn't stealing. He said it was more of a loan, just part of a research effort he was conducting on his own time. And after all, the equipment in the demonstration room didn't really belong to anyone. He also said the firm made most of the equipment itself or got it at a steep discount from suppliers, so the cost was minimal.

The manager knew the engineer was the ultimate bit-head. Perhaps, the manager thought, he was telling the truth. And if he didn't intend to keep the equipment, was it really theft? Moreover, the engineer was an extremely valuable resource, critical to the development of a new application. The manager concluded that the whole thing was a misunderstanding and went to the CEO to ask for a reinstatement. The CEO reluctantly agreed. Two weeks later, the employee and the equipment were back on the job. No announcement was made to the staff.

The staff reacted in various ways. Some believed that management had essentially sanctioned criminal behavior. They expressed discomfort at working with the individual. Some believed that management had done the right thing in giving a talented individual a second chance. Most just ignored the situation.

LESSONS LEARNED

Most large companies have clear-cut policies on employee theft, with infractions drawing significant penalties. Smaller

companies tend to rely on their collegial atmosphere as a guarantee against such behavior. But the atmosphere of trust can easily be shattered.

Company A's management may have overreacted when it basically accused everyone in the company of being a potential thief. We'll never know if the resulting weekend heist was a coincidence or the result of an employee deciding to "teach the firm a lesson." It would have been better if management sent out a memo that stated the problem of supply costs and asked employees to take only what they needed, rather than instituting a key control procedure. Management also could have asked for suggestions on how to monitor the situation.

Company B may not have had a real thief on its hands, but the way it handled the situation was extremely bad for morale. Employees, lacking any real information, could only conclude that either one of their colleagues had been accused and dismissed unfairly or that the company tolerated thieves if they were important enough. A better approach would have been to issue a short memo stating what had happened and that management was satisfied it was a misunderstanding, and reiterating the company's rules on equipment usage.

Every firm, no matter how small, needs a clear policy that outlines when equipment or other valuables can be removed from the office, and that a violation of the policy is considered theft and cause for immediate dismissal. It then needs to enforce that policy across the board. Even if the money involved is minimal, employees have to believe that their workplace is secure and that appropriate controls are in place to find the guilty party without accusing the innocent. □

Allen's column deals with people issues managers face every day but are reluctant to discuss openly. Each is based on a real-life situation. The names and certain circumstances have been changed to protect confidentiality. Allen is a director at Tenex, a management consulting firm in Burlington, Mass.

Wanted: Smart managers

What management technique do you use that you consider particularly effective? Send a brief synopsis, and we'll work with you to develop a case study for publication. Topics include: interviewing candidates, hiring and firing, counseling, handling conflict, planning, budgeting, controls and reporting — the whole gamut of management issues. E-mail Leilani Allen at allen@tenex.com (no vendors or consultants, please).

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Buyer's Guide

ADVISORY: The network of the future isn't ready yet. Experts say don't make major switch decisions until standards take shape.

USER VIEW: Users favor Cabletron among switch vendors

GIGAWAIT for GIGABIT

By Kevin Burden

Good luck

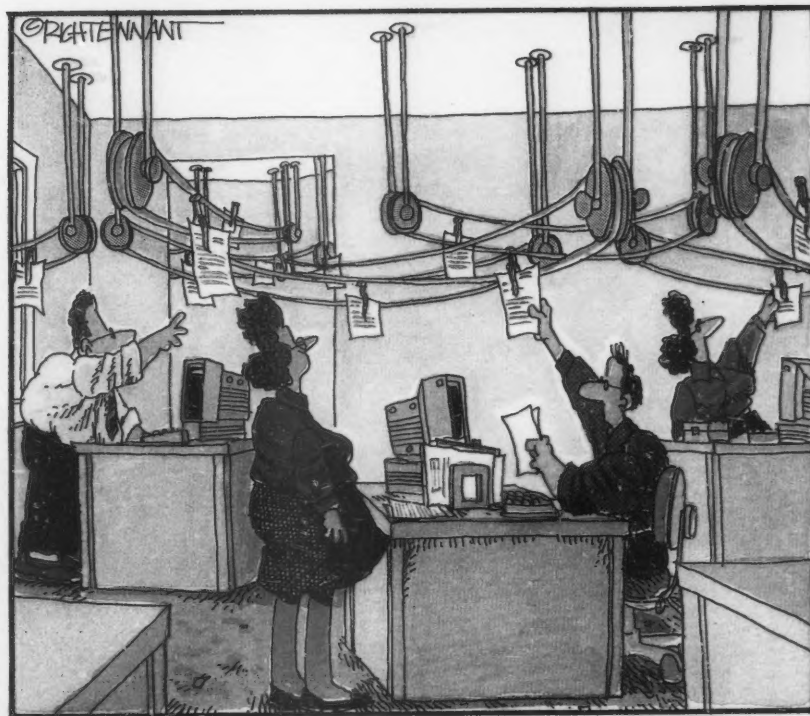
making decisions now for your network's future. Think of it — internetworking vendors are promoting the promise of and decrying the weakness of technologies such as Gigabit Ethernet and Layer 3 switching. As one industry analyst put it, "The FUD is flying thick right now."

Whether you should be interested in Gigabit Ethernet isn't much of a decision — you probably already are, especially if you're among those who have run 10Base-T Ethernet or Fast Ethernet to servers and desktops. Your network's backbone is screaming for more bandwidth to handle these volumes, and Gigabit Ethernet promises to deliver it with a smooth, cost-effective upgrade path.

You're also interested in Layer 3 switching, which gives switches the router intelligence to read IP addresses deeply buried in data packets. That address determines a packet's ultimate destination and is what enables routers to look past the destination address in the packet header and send packets around trouble spots so that they don't end up in virtual black holes. It's also the technology you gave up in exchange for the high performance and lower cost of Layer 2 switches.

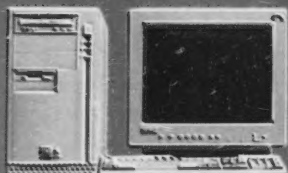
Luckily, these technologies are part of your network's very near future, but they are still just out of reach. Now isn't the time to make firm decisions, analysts say. Rather, it's time to wait for standards to finalize and watch the industry consolidate. In the meantime, you can get your ex-

Gigawait for gigabit, page 94



"Don't worry, Gigabit Ethernet will be here soon."

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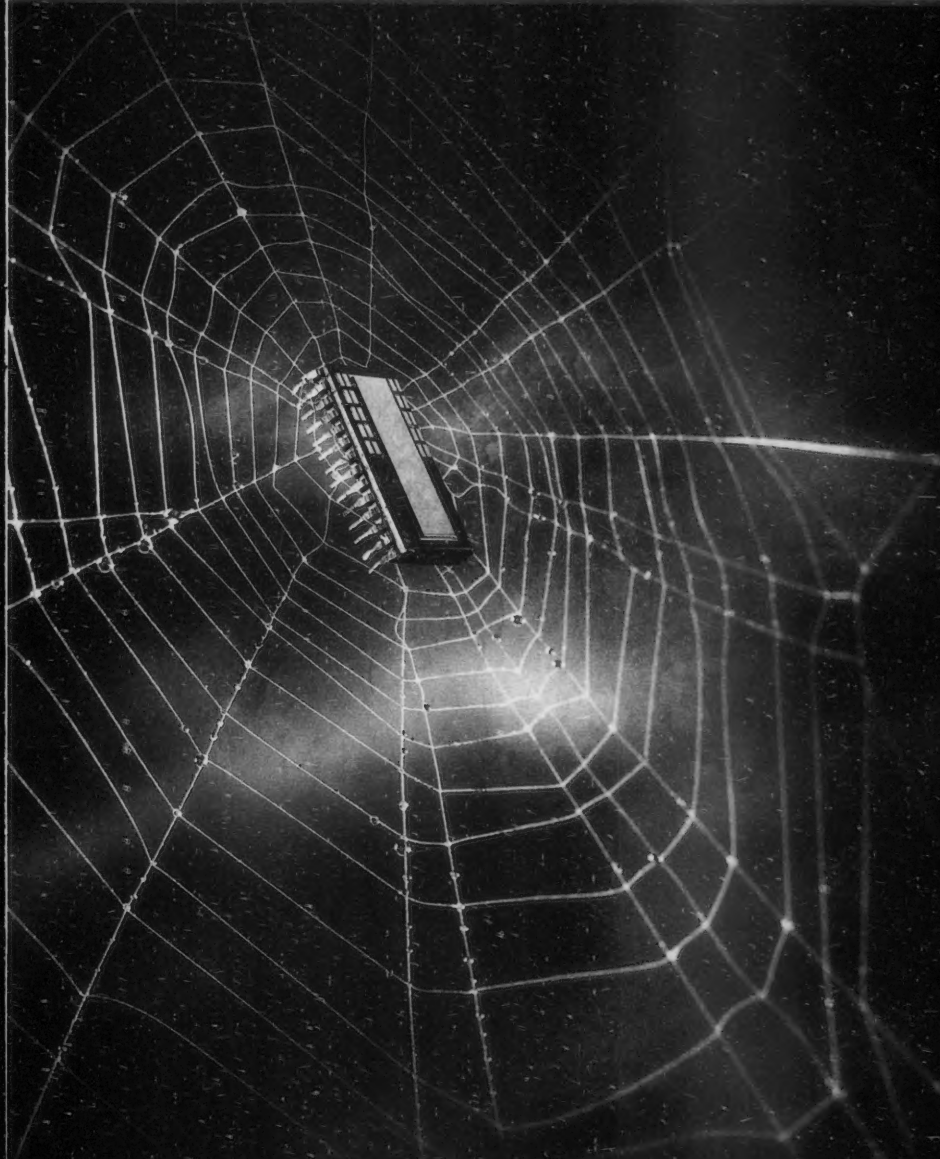
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GIGAWAIT for GIGABIT

CONTINUED FROM PAGE 91

expectations for these technologies under wraps, ready network segments with required infrastructure and learn everything possible about vendor offerings.

Gigabit Ethernet currently is going through a standards ratification process, which analysts say they expect to be completed in the second quarter of next year. Until then, several switches close to standard are available from several small vendors. And although those vendors promise the switches will be easily upgraded to the Institute of Electrical and Electronics Engineers, Inc.'s final standards, analysts warn of several aspects to consider if you're thinking about investing early.

RISKY BUSINESS

First, considering Gigabit Ethernet will most likely be used on network backbones, there are several risks to exposing a network's heart to unfamiliar vendors. "You can definitely bet on the wrong horse," says Dwayne Shirakura, a senior analyst at Dell'Oro Group in Portola Valley, Calif. This means to be wary of small vendors that aren't establishing relationships with strategic vendors such as 3Com Corp., Bay Networks, Inc., Cabletron Systems, Inc. or Cisco Systems, Inc. "You want your internetworking vendors to provide support, maintenance as well as the next generation of features. Start-ups won't be able to compete with the majors once they get rolling," Shirakura says.

Many start-ups already have "double-secret relationships with major vendors," says Melinda LeBaron, a research director at Gartner Group, Inc. in Stamford, Conn. "OEM relationships are their lifelines, and we'll soon start seeing major vendors coming out with renamed products without much of an explanation of where the products came from."

This is true for Gigabit Ethernet and Layer 3 switching products. If you buy in early with secondary vendors, whether it's for testing or because you need immediate bandwidth relief, learning what relationships the vendor has should be a top priority, LeBaron says. "Users should also make sure of the products' interoperability. So if they later decide to go with another vendor's switch, they'll be able to connect boxes," she says.

Secret relationships, along with the market consolidation that has already begun, make it difficult to know what vendor you'll ultimately be doing business with. Steve Lucas, a network manager for the city of Columbus, Ohio, says fear of the unknown is why he is waiting for Cisco — his primary vendor — to release its products. "I have to dance with the girl that brings me," Lucas says. "Be-

sides, homogeneous connections are critical to the performance of our backbone. To me, it's worth waiting for the standards."

Analysts say they expect the unknowns to hold off large user investments until next year. The exception will be users who find products that meet specific requirements. Those users may look at smaller companies such as Excellent Design, Inc. in San Diego. "It tightly focuses on migrating users with [Fiber Distributed Data Interface] backbones to Gigabit Ethernet. It's exactly the type of investment that makes sense for users [with this specific requirement] to look at now, as opposed to waiting for products based on standards to evolve," says Paul Zagaeski, a senior analyst at Giga Information Group in Cambridge, Mass.

Users also should fully examine what

to a Fast or switched Fast Ethernet. Gigabit Ethernet promises to protect that investment by delivering more of the same. Under Gigabit Ethernet, there will be no retooling of the network infrastructure or retraining network administrators. LAN emulation isn't a concern as it is with ATM, plus Gigabit Ethernet's 1G bit/sec. capacity is higher and will be less expensive than ATM's 622M bit/sec.

But those users should realize that today, Gigabit Ethernet requires fiber cabling on the backbone. The two copper interface standards haven't yet been finalized.

If you want to take advantage of gigabit technology today but are hesitant about pre-standard products, gigabit uplinks are now rolling out from several start-ups and major vendors.

Uplinks create a fat pipe up to the

number of diverse strategies used by vendors, LeBaron says. Every vendor has its own scheme, and it's too early to judge which will be the most effective or most likely to be adopted as a standard.

Some vendors have all traffic first go through a routing module that's added in the switch's chassis. Others add a routing process to each module in a switch that acts as a routing engine near the switch ports. Major vendors that don't want to be forced into niche roles offer several approaches that they pack with proprietary technology, such as Cisco with its NetFlow Switching and Cabletron with its SecureFast Virtual Networking.

"Now is not the time to make decisions on this technology. Wait if you can," Zagaeski says. And many users are able to.

No matter how far users have bought in to switching, most never fully gave up their Layer 3 router, especially those who run large networks. "Layer 3 is not something you can get around; it needs to be there," LeBaron says. Somewhere on the network, there probably remains a router for creating boundaries within the network and for scaling large user communities.

ATM ALTERNATIVE

If you can't wait it out, and you absolutely must get traffic control or bandwidth management into your network today, your alternative is ATM, Zagaeski says. "But if you have the luxury of looking at Layer 3 switching as a yearlong migration, it makes more sense to wait until the different Layer 3 schemes play out."

In the meantime, there are two overall approaches to begin evaluating. Add Layer 3 functions to a Layer 2 switch or add Layer 2 services to a router. Both will work, but Zagaeski says it's more advisable "to add Layer 3 to a more forward-looking Layer 2 switching architecture than it is to retrofit an expensive Layer 3 router into a Layer 2 device."

The ultimate example of that approach is full-fledged routing switches. Like routers, those switches read every packet before sending them along, but they do it at close to Layer 2 speed.

Cut-through switches offered by many vendors today are another example of this approach. But these switches take a shortcut when processing packets. Instead of examining every packet, it reads only the first, then routes the rest to the destination of the lead packet.

But LeBaron warns against this cut-through technology. "This is routing through software," which she says can cause interoperability problems with other internetworking devices.

"Besides, routers are getting just as fast as switches. So a lot of the shenanigans everyone is going through now is unnecessary because router performance will not be an issue much longer," LeBaron says. □



Users also should fully examine what they expect from Gigabit Ethernet, so they keep their expectations realistic.

they expect from Gigabit Ethernet, so they keep their expectations realistic. Those looking at the technology as an alternative to Asynchronous Transfer Mode (ATM) — not just for the capacity, but for added services such as traffic management, prioritization and quality of service — should understand that ATM will hold a functional advantage for quite some time.

"Gigabit Ethernet vendors are being very careful when they talk about [quality of service]," which is the standard that allows switches from different vendors to cooperate when handling traffic streams such as voice or real-time video, says Esmerelda Silva, a senior analyst at International Data Corp. in Framingham, Mass. "It won't be near what vendors initially talked about," she says. This only matters to a relatively small number of users, because the majority of today's LAN segments carry data traffic only. But early adopters should realize Gigabit Ethernet will need time to mature and develop those capabilities.

For those evolving a shared Ethernet

backbone and are needed by anyone starting to connect 100M-bit switches together, Silva says.

Trunking is another interim technology available from all the major vendors. As with uplinks, trunking also increases a pipe's performance to the backbone. But it does it by grouping the ports of a switch together. Both technologies can be leveraged by a Gigabit Ethernet backbone, no matter which vendor you choose.

LAYER 3 SWITCHING

Another evolutionary step for switches, beyond expanding to gigabit capacity, is Layer 3 functionality. Except for the router you probably still have on your LANs, you traded much of the intelligence your network had to find alternate paths around damaged segments for the speed of Layer 2 switches.

Today, vendors have several ways to add that intelligence to Layer 2 switches, without dragging performance down to that of routers. Unfortunately, choosing an approach is very confusing because of

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FOCUS PAYS OFF

FOR CABLETRON

By Kevin Burden

If you think the customer satisfaction scores on the right mean Cabletron Systems, Inc. is the only vendor worth calling for internet-working switches — hold on.

True, Cabletron apparently does a stellar job at satisfying its users, but it does so because it concentrates its efforts on a select, focused set of customers, according to Paul Zagaeski, a senior analyst at Giga Information Group in Cambridge, Mass.

If you fit Cabletron's target customer profile, you will be taken care of. If you don't, you'll never even get its attention.

But because *Computerworld's* customer satisfaction survey shows high user satisfaction in at least some areas for each of the other three leading switch vendors — Bay Networks, Inc., Cisco Systems, Inc. and 3Com Corp. — there may be no reason to look past your current internetworking vendor for switch technology, unless you've developed a highly specialized industry or technology need.

Computerworld contacted 173 managers responsible for acquiring switching products. They were asked to rate their satisfaction with switching products as well as with their vendors' services and future direction.

Cabletron scored unusually high, starting with performance, right through every other category that should be heavily scrutinized when evaluating internetworking switches.

LOYAL CUSTOMER BASE

By concentrating on a narrow field of very large corporate, telecommunications and education sites, Cabletron can devote a lot of attention to building a very satisfied, very loyal customer base, Zagaeski says. "Cabletron has made its reputation by powerfully focusing on segments of the market they want to serve. And those companies just feel as if they are getting the best care possible."

On the flip side, Zagaeski says, "If you don't fit into those segments, then you don't count."

"We couldn't get Cabletron's attention, and we had 85 [Cabletron] switches," says Steve Lucas, a network manager for the city of Columbus, Ohio. The city had two Cabletron networks, one with 1,200 workstations, the other with 2,000. "And that wasn't enough for them to send out a systems engineer to help us," Lucas says.

Focused or not, there's no denying how highly

satisfied Cabletron users are. But let's be clear: High satisfaction doesn't necessarily mean superior products. Although the opinions expressed by the users of all four vendors fall in line with the expectations of several industry analysts, they don't represent any objective benchmarking. They are purely subjective measures that have little to do with raw performance or actual reliability.

For example, although Cabletron scored the highest for performance, that doesn't necessarily mean it has the best-performing switches. It does mean Cabletron users feel that its technology performs as well as anything else available. And based on their experiences, they expect Cabletron switches to continue the same performance standards.

EXPANDING EXPANSION

In some cases, grades do call out definite strengths, such as the expandability of Cabletron's switches. In no other category is there as wide a gap between Cabletron and its competition. Several users named expansion as one of the particulars they most liked about Cabletron switches, namely its MMAC-Plus switches. With it, "you buy one platform, one chassis and you'll be able to use it for 10 years," Zagaeski says. It was designed so all its modules are upgradable; even the backplane that everything plugs in to is an upgradable module. "It was a very different approach when we looked at it. It's also what sold us on it — the fact that we could just pull out and add other boards," says Greg Moremile, chief of telecommunications at the U.S. Minerals Management Service in Herndon, Va.

Expandability can also mean reusability; modules can be taken out of one device and inserted into another, according to Zagaeski. "This has always been true with Cabletron switches and

only rarely true with other vendors."

Cisco's grades, while noticeably lower than Cabletron's, better reflect what the highest grades historically are in *Computerworld's* customer satisfaction surveys. "Very satisfied" grades from half of a vendor's response base is typically enough to set it ahead of competitors. But in this case, it's barely enough to squeak out second place over 3Com. Which goes to show again that your incumbent vendor may be as good a choice as any.

Cisco scores particularly well for reliability and performance, but users say you pay for every bit of it. Cisco has historically charged 20% to 50% more for its high-end router equipment, but it can't maintain those margins in the lower-end, highly competitive switch market, Zagaeski says.

Still, Lucas acknowledges that he paid top-dollar to standardize on Cisco devices. "We paid the price, but we justified the expense to one-stop shopping," he says. "We also get a lot of engineering support freebies because we give [Cisco] all our business, which makes the cost far less of an issue."

BAY TREPIDATIONS

Bay's overall satisfaction grade shows its users are slightly apprehensive about their vendor. Its overall satisfaction grade as well as the other categories don't appear too bad when considering it collectively had more than 80% of its users saying they were either 'satisfied' or 'very satisfied'. But if the number of users saying they are very satisfied is any indication of how a vendor appeals to its customers, then Bay has some confidence building to do.

Bay's problems stem not so much from its technology as from its internal structure, according to Jay Borden, vice president of Giga. "Bay is recovering from a very difficult period, and these figures are a good reflection of the general doubts its users still have," Borden says. These are doubts about Bay getting its merger to actually happen, not just in name. As well as showing up in markets on time, which has been one of its plugging problems.

Bay is known to be strong in its compatibility with standards, according to Mike Speyer, a program manager at The Yankee Group in Boston. Yet the general uncertainty still felt by its users kept its grades in that category lower than the industry might expect. "Bay didn't put any proprietary technology into its Adaptive Networking Strategy like NetFlow in the case of Cisco or SecureFast in Cabletron's case. It just hasn't articulated this strategy well enough to its users," Speyer says. □

Burden is *Computerworld's* features writer, *Buyer's Guide*.

SWITCHING TECHNOLOGIES

Which vendors do your peers think are doing the best and worst: Now and in the future?

WIN, LOSE OR DRAW

Cabletron scores the highest percentage of "very good" grades in overall satisfaction, Bay places last, 3Com and Cisco are virtually tied

	3COM	CISCO	CABLE- TRON	BAY	
Performance	50% 26%	62% 30%	79% 18%	47% 42%	VERY GOOD GOOD
Reliability	57% 33%	76% 12%	79% 18%	67% 26%	VERY GOOD GOOD
Manageability	17% 48%	36% 42%	50% 35%	19% 51%	VERY GOOD GOOD
Expandability	43% 28%	48% 30%	76% 9%	40% 44%	VERY GOOD GOOD
Compatibility with standards	50% 35%	64% 26%	82% 9%	51% 33%	VERY GOOD GOOD
Overall satisfaction	50% 41%	52% 40%	79% 18%	37% 53%	VERY GOOD GOOD

Base: 46 3Com users, 50 Cisco users, 34 Cabletron users, 43 Bay users

Source: Computerworld Information Management Group, Framingham, Mass.

CONFIDENTIALLY SPEAKING

Users' confidence lies with Cabletron, Cisco.
Bay takes a spot in back of the line

Confidence with your switch vendor over the next two years
(Based on a 1-to-5 scale, in which 1 = not at all confident and 5 = very confident)

3COM		CABLETRON	
Technical direction	4.00	Technical direction	4.45
Corporate stability	4.43	Corporate stability	4.44
Service & support	4.13	Service & support	4.45
Integration with other vendors	4.02	Integration with other vendors	4.38

CISCO		BAY NETWORKS	
Technical direction	4.54	Technical direction	4.03
Corporate stability	4.60	Corporate stability	3.98
Service & support	4.31	Service & support	3.95
Integration with other vendors	4.20	Integration with other vendors	3.88

Base: 46 3Com users, 50 Cisco users, 34 Cabletron users, 43 Bay users

Source: Computerworld Information Management Group, Framingham, Mass.

ATM - (Asynchronous Transfer Mode) A high-speed transmission technology that handles data, voice, video and television signals. Its high price and complexity opened the door for Gigabit Ethernet to compete for LAN backbone business.

NOW: Bay users are the most comfortable with their vendors' implementation of ATM; only two Cabletron users say their vendor has implemented ATM, and they rate it "average."

FUTURE: Cabletron grabs the lead in future confidence of its implementation of ATM, followed closely by Cisco. 3Com lags in last place.

ETHERNET - The dominant LAN technology in the corporate world, running at 10M bit/sec. over various types of wires.

NOW: Cabletron takes the lead again in Ethernet; 3Com users place it last, with Bay slightly ahead of it.

FUTURE: Again, Cabletron leads the pack in Ethernet, with 3Com placing last.

FAST ETHERNET - A way to run Ethernet at 100M bit/sec., up tenfold from traditional Ethernet. It's often used as an alternative to FDDI.

NOW: Cabletron and Cisco are neck and neck in the race for winning users' confidence in this technology.

FUTURE: Looking ahead, users rate Cisco slightly ahead of Cabletron; 3Com trails far behind the pack.

FDDI - (Fiber Distributed Data Interface) A fiber-optic LAN that runs at 100M bit/sec. It's most often used on LAN backbones to link file servers and LANs.

NOW: 3Com users place their vendor in the lead in FDDI delivery; Cisco users are the least confident.

FUTURE: Cabletron pulls the lead again, with Bay falling the farthest behind the others.

GIGABIT ETHERNET - An emerging standard for running Ethernet at 1G bit/sec. It can be a true alternative to ATM if it eventually supports real-time voice and video.

NOW: It's too early to gauge user confidence levels: Bay and Cabletron don't appear to have any users familiar with their technology, Cisco has three, and 3Com has one respondent who says the vendor has implemented the technology.

FUTURE: Cisco users are placing their hopes with this vendor; 3Com falls woefully behind the others.

SWITCHED ETHERNET - Ethernet networks that run through high-speed switches rather than hubs.

NOW: Cabletron and Cisco tie in user confidence.

FUTURE: Cisco breaks ahead of Cabletron slightly; users are least confident with Bay.

TOKEN RING - A ring type LAN developed by IBM. Its bandwidth tops out at only 16M bit/sec. and hasn't yet developed a high-speed solution.

NOW: Bay takes the strongest lead in this category; 3Com comes in last.

FUTURE: Respondents rate vendors the lowest in the Token Ring category. Cisco places far in the lead, and Cabletron places last.

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CLOSING THE GAP



CA's Charles Wang on better aligning business and IT

When you're chairman and CEO of a \$4 billion software company, you talk to a lot of executives about information technology and business. Charles B. Wang, head honcho at Islandia, N.Y.-based Computer Associates International, Inc., has parlayed that experience into a book, *Techno Vision II*. Wang says the emergence of the Internet spurred him to update *Techno Vision*, published in 1994.

The goal of *Techno Vision II* is to identify and eliminate the disconnection between business executives and IS managers. The following excerpt is from Chapter 9, "Foundations for Realignment."

FOR AT LEAST the last 10 years, senior business and information systems executives have struggled with how to bring information technology and business into closer alignment. As business needs multiplied and the gap widened between the solutions IT offered and the business challenges facing managers, enlightened representatives of both camps redoubled their commitment. The ideal is an alignment strategy that will optimize the provision of IT and service to the user community.

The focus of IS has changed from automating internal (back-office) processes to enabling multifaceted mechanisms for directly delivering products or services to the customer. The increased complexity of these systems is compounded by the fact that many are used for competitive advantage, giving them life-or-death urgency. The central argument now becomes how to organize IT to achieve higher levels of competitive advantage.

With today's shorter product cycles, the old IT culture leads inevitably to large development backlogs and missed delivery targets. Corporate efforts to hold down total IT costs are also symptomatic of the old mentality and can be problematic, given strenuous business unit competition for available, sometimes even scarce, IT resources.

Notwithstanding a greater melding of IT and business units, alignment efforts must maintain professional IT work and systems standards and allow IT professionals practical career options. If you can offer opportunity and technology together, you have a better chance of identifying competitive advantage systems.

Companies that have internalized these new realities have substantially eliminated the disconnect. These companies have the ability to access and process information on global competitive intelligence, new product information, research and development, market trends and environmental and regulatory impacts. Having done so, they can act quickly and then move on to the next challenge. Eliminating the disconnect removes many of the obstacles that paralyze organizations.

Many methods for aligning IT resources and business goals are already in use. I am privileged to visit hundreds of companies every year; my conclusion is that there are as many strategies as

there are companies. Every organization presents a unique set of constraints and opportunities. Yet I have found that a core set of business strategies is common to the most successful companies. I have identified five key strategies that organizations can adopt to eliminate the disconnect. A combination of these methods is probably best, because each is accompanied by risks.

1. Select the right CIO

I am convinced that while most chief executive officers are keen judges of character, most don't have a clue about how to recruit a chief information officer. Two things need to be kept in mind.

First, selecting the chief IT executive is a job a CEO cannot delegate. If you're going to have a CIO as one of your top-echelon managers, if you're committed to having a close working partnership, then you have to select the CIO yourself.

Second, there is one fundamental question you have to ask yourself about each CIO candidate: Is this person CEO material? If this key question can be answered affirmatively, there is a good chance for the beginning of a true partnership between the CEO and the CIO.

Too many CEOs still perceive IT as automating manual processes. Until they see it as a tool to be more competitive, they will be tempted to ask their chief financial officers to pick the CIO. Most companies have IT reporting to the financial executive. The disconnect cannot be eliminated until this practice is retired.

The bottom line is that eliminating the disconnect requires a change of attitude. Both the CEO and CIO have to accept a new outlook. The CEO's responsibility is to learn some technology and open up the decision-making process. The CIO's contract is to accept the role of the businessperson chiefly responsible for making the technology serve the business.

2. Decentralize and disperse IT resources

Many companies have begun to decentralize or disperse IT resources to better align business and technical objectives. In solving some problems, decentralization and dispersal introduce others just as troublesome.

"Decentralization" is a broadly used term. I use

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Wang calls the Internet "the ultimate fully distributed threat to the status quo"

JOHN ARBUTH

CLOSING THE GAP

CONTINUED FROM PAGE 99

it to refer to the process whereby a large, central IT group is broken up and physically placed with the business groups they support, but still report to a central IT unit. Thus while they are physically decentralized, there is no decentralization of management authority. While these groups are still managed by IT professionals, the IT resource is brought closer to the business units and their customers. This can only be good for the company.

"Dispersed" IT decentralizes management responsibility as well as physically relocating people. The IT professionals generally report to managers in the business departments and workgroups they serve. The result can be a very tight integration of technology and business applications.

There are a number of very problematic downsides to decentralization. In many cases, it does not address alignment, because systems are still developed according to traditional methodologies. Instead of one big disconnect, the company has created a number of smaller disconnects. Another downside is enforcing discipline and standards among the autonomous business units. For all its limitations, the centralized data processing function did develop an impressive record for maintaining data integrity, data security, the enforcement of standards and backup.

Decentralized IT units establish their own standards and procedures, often without regard to the rest of the enterprise. Without a strong CIO, communication between the decentralized units breaks down. Turnover in IT can also become more of a problem in decentralized units. IT

groups relocated to business units are sometimes ostracized and bypassed by increasingly sophisticated end users. Consequently, this kind of reorganization, without explicit attention to the culture, actually worsens the alignment situation.

Providing practical career options for decentralized IT professionals may be the most difficult issue. In some decentralized organizations, many IT professionals feel lost in the business units. Decentralization limits or terminates as many technical careers as it forges. Technical professionals know this. As a result, turnover can be high in the first few months following decentralization. On the other hand, some technical professionals really learn the business and make a home for themselves on the business side.

The key items for successful dispersion involve managing the migration to a business culture, which includes preparing both the IT people and their new business unit management. When preparation is not adequate, business unit management sometimes asks central IT to "Take these people back!"

3. Transform IT into a profit center

Another method for alignment is the conversion of the IT resource into a profit center. The idea here is to make the service nature of the IT resource explicit. In theory, the IT department has to provide its value to the other business units.

This strategy can, unfortunately, create a new set of contractual walls between IT and the user. But if the contracting process is managed well, user departments are much better off than before, when they were the captive customers of an often indifferent IT center.

An extension to this approach is to spin off IT as a separate business entity altogether. This sink-or-swim approach can transform inefficient data centers into models of productivity and can even return a profit to the parent company. The downside is that it forces the data center to focus much more energy on marketing as it pursues business opportunities.

I haven't seen making IT an independent profit center done well. [Management author and expert] Peter F. Drucker regrets coining the term "profit center." His well-taken point is that in the context of the business isolated from the customer, the very concept of the profit center is suspicious. "Profit comes only from the outside," he writes. "When the customer returns with a repeat order and his check doesn't bounce, then you have a profit center. Until then you have

only cost centers." Spinning off IT accomplishes little unless rigorous commitments to marketing, customer service, quality and other business objectives accompany the spin-off.

4. Advance end-user computing

An emphasis on end-user computing helps align business goals with IT because it puts both decisions into the hands of the people with the most intimate understanding of the business challenges. The benefits are immediate: Users get the systems they want because they themselves have built them. Since they are totally invested in the process, the resulting systems have a greater chance of being on target and are more likely to stay on time and on budget.

The principal problem with end-user computing is that end-user groups have not developed the data center disciplines that result in reliable, secure and robust applications. Systems developed by end users frequently suffer from data security and integrity flaws.

The good news is that emerging system software will help end users prepare applications that are as reliable and maintainable as those developed by professional programmers.

The key is to determine what kinds of systems end users can be expected to develop reasonably well, and how best to help them develop those systems. The goal is not to turn end users into programmers. Rather, the goal is to give end users tools they can use to access the information they need more easily. A side benefit is that end users learn more about IT, and the programming staff learns more about business goals.

Success depends on being able to move the IT professional into a consulting role to deal with cleanup and documentation requirements for business-critical systems. In any case, it does not seem likely or desirable that end-user computing can manage large, real-time, host-based operational systems, so it addresses only part of the business unit performance issue.

5. Promote evolution, not revolution

One consequence of the disconnect is an unthinking preference for revolution. I hope you will resist it. I believe it is almost criminal to destroy existing technology simply because something new comes along. There will always be something new coming along. But it will rarely be in the best interests of your business to abandon what is working well and risk replacing it with something that might work better.

The approach I favor is called "intelligent evolution," or building on what we know. It involves taking the technology that we know works as a foundation, and building on that foundation by adding the new technology. The most important aspect of this approach is that it respects and lets you leverage the significant investments you have already made in existing technology.

Think evolution, not revolution. Rethink how you can use existing technology, and you may find that you don't need to discard the old after all. Evolution limits risk while enabling the introduction of new technologies integrated with existing systems, so your company can continue to be responsive to the competitive demands of the market. □

From Techno Vision II: Every Executive's Guide to Understanding and Mastering Technology and the Internet, by Charles B. Wang. Copyright 1997 by Computer Associates International, Inc. Reprinted by permission of McGraw-Hill Cos. Hardcover, 286 pages; \$19.95. ISBN 0-07-068169-4.

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IT Careers

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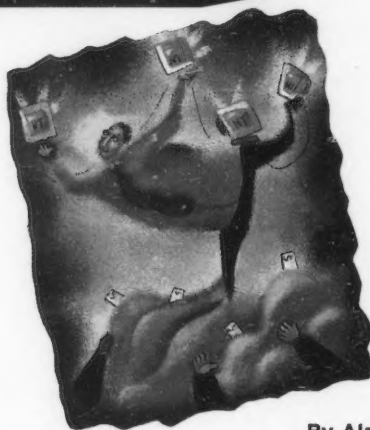


ILLUSTRATION BY STEPHANE DENIS

By Alan Radding

CHRIS LUCKSTEDT has received phone calls from headhunters who try to interest him in networking jobs that pay more than \$100,000 per year.

With LAN/WAN skills, hands-on experience, project management experience and the personal relationship skills to handle demanding business managers, Luckstedt is a hot commodity in today's networking market. He would be more grateful for the attention. But as president of Infrsystems, Inc., a networking services company in Troy, Mich., Luckstedt is trying to hire the same kind of people. And they are in short supply.

Then there is the staffer at a government agency who has PC LAN experience but complains he hasn't had a raise in six years. He says he sees no prospects for promotion in his highly politicized agency. "Should I go for the MCSE certification?" he asks online. Advice: Go for the MCSE (Microsoft Corp. Certified Software Engineer), the key certification for Windows NT networking.

"NT is going great guns," says Paul Eichorn, systems manager at Desaulniers MacLeod, a recruiting firm in Chicago. Eichorn runs the firm's Novell network, but he may pursue an MCSE himself.

Overwhelmingly, recruiters, operators of jobs bulletin boards and hiring managers themselves consider Windows NT the hot networking platform and see soaring demand for NT skills. Qualified, experienced Windows NT networking professionals are pulling down top salaries and receiving signing bonuses of \$5,000 in some markets.

Driving the demand for Windows NT networking professionals is the adoption of Windows NT by large organizations. For example, JC Penney Co., the national retailer in Plano, Texas, is rolling out a massive Windows NT network to connect more than 1,200 stores and other facilities. And with the recent acquisition of pharmaceuticals company Eckerd Corp. in Largo, Fla., JC Penney expects to add several thousand more locations, all connected via Windows NT, says Carl Soerens, senior project manager for IS recruiting at JC Penney.

"Our networks are growing exponentially, and we are looking at a long-term expansion," Soerens says.

Windows NT is getting the attention today, but networking skills across the board are in high demand. "Any type of LAN and WAN experience is in demand,"

says Michael Tyler, a budget analyst at the U.S. Department of Commerce and administrator of the Capital Telecommunications Professional job bank (www.ctpva.com).

But don't think the big money goes to just anybody. You need to have a Certified Novell Engineer or MCSE certification and lots of experience, says John Barchie, Silicon Valley chapter president of the Network Professionals Association and a senior systems engineer at InfoMatrix in Pleasanton, Calif.

Barchie's own employer is looking for experienced network engineers. But as a networking services vendor, InfoMatrix particularly needs engineers who are self-directed and can communicate with customers. □

Radding is a freelance writer in Newton, Mass.

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Networking professionals profiled A look at their backgrounds, skills and career goals

PAUL EICHORN

CURRENT POSITION:

Systems manager at Desaulniers MacLeod, a Chicago recruitment company. Manages the corporate Novell network.

PREVIOUS CAREER:

Employment recruiter

BACKGROUND/ TRAINING:

Self-taught on the job, took computer courses at a local college. "While I was a headhunter, I saw secretaries taking up networking and getting ahead," he says. He bought a PC and learned its functions. He also took a job as a support person, where he acquired on-the-job computer skills.

FUTURE GOALS:

Wants to pursue advanced networking certification through university-affiliated program

JOHN BARCHIE

Senior systems engineer at InfoMatrix in Pleasanton, Calif.

Computer salesman

A few computer courses in college. Received CNE certification in 1990. Barchie paid \$7,500 for classes to earn his CNE. He quickly landed a job that paid \$38,000 per year, far above his previous salary. A year later, he earned \$45,000. His salary is now above \$72,000.

Wants to leverage his extensive on-the-job experience, certifications and customer reputation to take on greater responsibilities at higher pay.

CHRIS LUCKSTEDT

President, Infrsystems, Troy, Mich.

Local networking services provider where he picked up his CNE

College education in literature, hobbyist interest in computers. Learned computers and networking at a small networking company, which helped him earn a CNE. Continues to take seminars and attend networking conferences and symposiums but hasn't had further formal network training.

Wants to build company to the point where he can go back to college and finish his literature degree.

By the Book

NEW CAREER TITLES ON FLEXIBLE WORKPLACES, IS CONSULTING AND JOB HUNTING

Books CD-ROMs Videos

Managing in a Flexible Workplace

By Barney Olmsted and Suzanne Smith
American Management Association, New York, 1997;
227 pages; \$22.95



If Christopher Columbus had been offered a map of the New World as he stepped aboard the Santa Maria, he would have been a fool not to take it.

Similarly, in today's new world of work — with flextime, telecommuting, job sharing and the widespread use of part-time workers

— temporary workers and consultants, there should be lots of interest in *Managing in a Flexible Workplace*.

This is a world that hasn't yet been mapped. In thousands of workplaces, individual employees and their managers struggle every day to redefine their roles and responsibilities. Those struggles range from the trivial — say, whether to invite contract employees to the company picnic — to far more substantive issues such as how to build low-supervision/high-motivation teams that are diverse, dispersed and compensated in different ways. The authors have produced a book that maps much of that unknown territory.

Despite its somewhat dry, textbook-like tone, the book is content-rich. It offers scores of useful thoughts and observations about how to navigate in the new work environment. Indeed, the book is worth reading simply as a reminder of how much the nation's work environment has changed in little more than a decade.

But because it offers so much that's concrete and useful, the book isn't for only the academically inclined.

For instance, there are solid, real-world examples of some lesser-known work options such as "phased retirement" and "V-Time."

And there are examples discussing how these programs have been implemented by several companies to help them retain access to hard-to-replace employee skills. Given how fundamental the book's focus is, it should be required reading for managers and employees at every modern organization.

— Alan R. Earls

Six-Figure Consulting

By Dr. Gary Scott Goodman
Amacom, New York; 179
pages; \$17.95 (paperback)



Gary Scott Goodman offers an impressive-looking biography: Fortune 1,000 consultant, telemarketing wiz, best-selling author, academic.

The book promises to be an insider's guide, rather than a simple how-to manual. Its breezy, conversational style is indeed a far cry from the measured, methodical prose associated with a conventional text. It reads more like a motivational speech (Goodman is also a lecturer) and includes some illuminating anecdotes and useful psychological insights into the major players in the consulting arena.

Unfortunately, the practical advice that does exist in this volume is subverted by the author's careless, ama-

teurish writing. An informal approach isn't necessarily a bad thing, but Goodman takes laxity to extremes. The book is so loosely structured, it's difficult to follow Goodman's train of thought: Point E precedes Point A, which comes after Point C. The text is riddled with capricious punctuation, malapropisms and very bad grammar.

Those transgressions are distracting in themselves, but more importantly, they undermine Goodman's credibility.

It's difficult to imagine someone whose written work can be so sloppy being hired by a major corporation to solve its telemarketing problems. Then again, maybe that's a testament to Goodman's true marketing genius.

— Melanie Menagh



Tom Peters Career Survival Guide: A Practical Guide to Getting Ahead in Impractical Times CD-ROM (for Macintosh, Windows 3.1 and Windows 95)

Houghton Mifflin Co. Interactive,
Boston, Mass.; \$39.95

Is Tom Peters still relevant? After so many years of selling his brand of business salvation, one might wonder. But if this CD-ROM (Peters' first) is any indication, the answer is still a more or less resounding yes.

After all, one of the secrets to Peters' success is his personal energy and irreverence, and this interactive CD-ROM reflects that better than any mere print book could.

Peters makes us think. To be sure, many of his observations about careers in the late 1990s are rather ho-hum.

But coupled with lively graphics, film clips, and sound — and a sort of career diagnostic scoring method — Peters has an impact.

The CD-ROM is organized as three "courses."

The first, "Reinvent Yourself," invites job seekers to explore the changing nature of the workplace and what that means for their next career move. The process includes hands-on exercises, interactive brainstorming sessions and video clips from the real world.

The second course, "Be A Project Maniac," offers a new way of thinking about time and priorities. It's built around "The Tom Peters Project Builder," a means for tracking activities, goals and accomplishments on a weekly basis.

The third course, "Think Resume," encourages job seekers to reexamine long-standing career beliefs and discover valuable job skills hidden in past experiences.

— Alan R. Earls

Keep Your Job! The Secrets to Being Indispensable

Hosted by Geoffrey Colvin, Fortune magazine editorial director
Fortune Video, Time, Inc., New
York, 1996; 45 minutes, with 80-
page resource booklet and audio-
tape; \$79.95

Although there's virtually no IS-specific advice here, there's much for information sys-

tems people to think about.

In an era where corporations downsize regularly due to acquisitions, new technology, worldwide competition and government deregulation, this video offers practical advice on how to judge your own employability by reevaluating your company, your job and yourself.

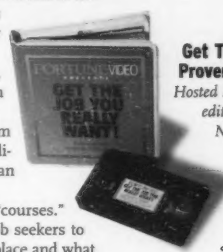
The video targets employees rather than managers; its strength is that it speaks in terms that a viewer can apply to his own job. Many will identify with the video's descriptions of dealing with a difficult boss, trying to make sure major accomplishments don't go unnoticed or attempting to cultivate key decision-makers to enhance one's future.

Some of the advice offered is predictable, such as the revelation that you can anticipate threats to your job by noticing when your company loses customers or suffers a decline in market share. But other tips are more practical.

The video asks whether, even though you may be good at your job, you can explain to a manager or a peer why you're valuable to your company. Learning the art of self-promotion is important because, like corporations, employees must be able to differentiate themselves.

The video also suggests a rather harsh, but probably useful, form of self-examination: Seek out people in your company who have a negative impression of you and ask them about it. The video offers key survival ideas you should think about before trouble comes your way.

— Steve Alexander



Get The Job You Really Want! Proven Job Search Strategies

Hosted by Geoffrey Colvin, Fortune magazine
editorial director; Fortune Video, Time, Inc.,
New York, 1996; 60 minutes, with 76-
page resource booklet and audiotape;
\$79.95

This video deals with the nitty-gritty process of job searching. As a result, there's practical advice for nearly everyone. But the video doesn't include IS-specific information.

Get the Job You Really Want is about how to search for a job intelligently. It says if you prepare yourself properly and pursue the job market with a plan, you will get the job you really want.

The video deals with the entire process of a job search, including coping with your feelings after losing a job, learning to set priorities when investigating the job market and learning to present yourself in a resume and job interview.

The greatest value of the video may be that it shows that a job search is really a voyage of self-discovery. One of the most interesting insights is that, although substance may get you a job, how you appear to other people will be more important in the initial stages. Appearance, consultants say, sends an employer some subtle messages: a man's worn-out belt may suggest worn-out ideas, a candidate's chronological resume may conceal their strongest points, talking too much in an interview could annoy the interviewer, and using too many hand gestures may betray that you're uncomfortable.

— Steve Alexander

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Qualifications include a MS in Computer Science, a scientific discipline or equivalent education/experience in Science and Information Technology, along with nine years' IT experience. Qualified candidates must possess extensive project management experience, including Microsoft client/server applications, relational databases, UNIX, C, PERL and Internet/Intranet Development. A background in standard sequence analysis methods/programs, GCG is desirable.

Interested individuals mail, fax or e-mail your resume* to: **Parke-Davis Pharmaceutical Research, Human Resources Department, Job Code: DB-97317, 2800 Plymouth Road, Ann Arbor, MI 48105. Fax: (313) 998-3394. E-mail: resume@aa.wl.com**

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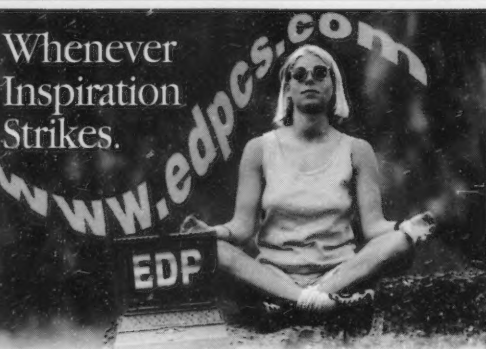
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Project Manager. 40 hrs/wk, 9am-5pm. \$50,825/yr. Lead project in the analysis, design, coding & testing of software for management information systems. Supervise 2 software engineers. Assign work projects to team members. Review work of others. Serve as liaison between company & clients. Project planning & tracking. Requirements management. Tools: UNIX; DOS; C; C++; COBOL; Oracle; Visual Basic; Excelerator; Powerbuilder; MS Access. M.S. in Computer Science as well as 1 yr. in job offered or as a Programmer required. Prev. exp. must include: DOS; C; C++; COBOL; Oracle; Excelerator; Powerbuilder; MS Access. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to: ILLINOIS DEPARTMENT OF EMPLOYMENT SECURITY, 401 South State Street - 7 North, Chicago, IL 60605, Attention: Jack Schaffer, Reference #V-IL-17029-H. NO CALLS. An Employer Paid Ad.

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Systems Analyst, Client Server and Mainframe Technology. assigned as Staff Analyst to analyze, design, develop and implement applications using Assembler, UNIX, PL/I, C, COBOL, C++, DB/2, PowerBuilder, and scripting languages and confer with users and management to analyze current operational procedures, identify problems, and user requirements. Multiple openings available. Requires Bachelors level degree in Computer Science, MIS, Mathematics or Engineering and four years experience in applications development in client server or mainframe technology. Successful candidate must be able to perform job duties on date of application. Qualified applicants must presently be eligible for permanent employment in the United States. Salary \$55,000 to \$75,000 per year, depending on qualifications, plus employee benefit plan; 40 hours per week (8:30 a.m. to 5:00 p.m.); overtime as needed without additional compensation. Send resumes to Ms. Kay A. McGee, St. Louis Branch Manager, Analysts International Corporation, 600 Emerson, Suite 200, St. Louis, Missouri 63141. An Equal Opportunity Employer.

Database Analyst: Develops database systems using RAIMA network database and C-SAFE windowing manager for trading systems for listed and OTC securities. Creates network applications in a CUNIX environment to allow users access market data as well as information regarding trading activities. Uses Object-Oriented Design and Visual C++ to create database applications for individual traders based upon their trading data and preferences. Requires Master's degree in Computer Science and six months experience as a Database Analyst or six months experience as a Programmer. Entire experience must include programming of database applications for financial markets. Please send resume to: Steve Siemski, Sr. Vice President, ABN AMRO Chicago Corp., ISI Systems Group, 175 W. Jackson, Suite A1547, Chicago, IL 60604. No Calls.

IS TECH SERVICES ANALYST II. Monitor production business applications and identification of problems not caught by alarms, receiving and tracking of production problems reported by users, the Operations Department, the Help Desk personnel or the ESS Department. Develop enhanced real time monitoring systems using C, C++, client/server based systems, data networks and SQL. Investigate production problems, determine the source of the problems and develop a resolution to the problem. Define and publish service level expectations for production systems. Communicate problem status and recovery status to upper management and train and support the Operations Department. Must have Associate's degree in Computer Science or Electrical Engineering and 2 years of experience in electrical engineering or electrical design fields. All experience may be gained concurrently. 40 hrs/wk (8-5); \$30,500/yr. Send resume to: Oklahoma State Employment Service Office, 110 S. Hartford, Suite 106, Tulsa, OK 74120 (ID# 7207) re: job Order #288347. EOE

Software Professionals - Madison, WI. TRIAD DATA's Madison branch needs experienced NATURAL/ADABAS and COBOL/CICS professionals (DB2 or IMS) possessing at least 2 yrs. of exp. in these skill mixes. Competitive salaries and benefits. Send resume describing qualifications to Paul Ray, Branch Manager, TRIAD DATA, Inc., 25 West Main Street, Suite 865, Madison, WI 53703; or call 1-800-964-8314 or 608-286-6000; or fax 608-286-6010.



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Programmer Analyst. Design, develop and implement financial and administrative applications computer systems in COBOL/DB2/CICS/IMS. Required: Two yrs. exp. in job offered. \$45,000/yr., 40hrs./wk. 9:00A.M. to 5:00PM. Two copies of resume to M. Brooks, File #100083; DWE-ALC; P.O. Box 7972; Madison, WI 53707-7972. Reference file #C100083.

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Qualifications: Minimum four years experience as either a programmer, systems analyst, programmer analyst, technical support, or related. BS Degree or equivalent at least 1 year experience with UNIX, C, and prefer experience with Informix. Knowledge of PC, PC application programs, and local area network necessary.

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Sr. Prog. Analyst: To analyze, develop & implement software application by applying programming techniques in C, C++, Microsoft Windows & RDBMS. Determine, recommend & prepare system & application software, data summarization and technical reports. Determine the pertinent requirement of the system applications per specifications. Convert project specifications, using flowcharts, diagrams & logical steps for coding. Duties are to serve as Sr. Programmer Analyst. Must have M.S. in Computer Apprs. +2 yrs of exp. Salary \$5,000/yr + med. benefits. Submit resume to: **Integrated Software Solutions, Inc.**, 110 Horton Drive, Ste. 240, Raleigh, NC 27615.

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TECHNICAL SUPPORT MANAGER

Tallahassee Community College (TCC) is accepting applications for a Technical Support Manager Technician position (#N15M101) in our Information Systems Department.

Application Deadline:
Monday, October 26, 1997
Starting Salary Range:
\$45,000-\$60,000 annually

This is highly responsible and independent work in the design, implementation and maintenance of TCC's LAN/WAN environment with direct supervision of the technical support staff. Requirements include graduation from an accredited four year college/university with major course work in MIS, Computer Science or related field and a total of 5 years experience in one of the following: LAN Administration, WAN Administration, network design/management, systems programming (in communications) or management of technical support team. At least one year of experience must be at the supervisory level. Post-secondary course work may be substituted for part of the educational requirement with education and experience totaling at least nine years.

Preference will be given to those applicants experienced in Novell NetWare 4.x, Microsoft NT server, Windows 3.x, Windows 95, 3270 communications, PC/LAN Office Suite, Corel Office Suite, Lotus Notes, IBM compatible PCs and servers, Ethernet, Token Ring, ATM Networks, hubs, switches, fiber & cat 5 media and high speed data lines.

This position has access to confidential records and/or the ability to alter applications programming. As a result, any record of prior convictions, pleas or sentences for felonies or third degree misdemeanors may be considered in making a selection.

To be considered, a completed TCC employment application must be submitted to: Human Resources Department, 444 Appleway Dr., Tallahassee, FL 32304-2895. Phone: 850-922-8104, Job Line: 850-488-9200, ADA TDD: 850-922-9239. If reasonable ADA accommodations are needed for the applicant process, please notify Human Resources by noon, October 14, 1997. Human Resources hours: Monday - Friday, 8am - 5pm. Search reopened, previous applicants will be contacted by mail. An equal opportunity/affirmative action employer. Preference will be given to veterans and spouses who are eligible under the Veteran's Preference Law.

Senior Systems Officer/Lead Developer - To participate in the development of systems interfaces to support electronic data delivery & capital stock processing. To develop standard reusable software components to format, translate & derive trade & capital stock transactions. To act as lead developer responsible for participating in all aspects of the product development life cycle: team leadership for the technical components of the life cycle; create & maintain project plan; prepare current business & systems environment assessments; define, document & publish business & systems requirements; create system design specifications & data conversion system design specifications; coordinate set up of communication between clients, transfer agents, trade system vendors & employer & employer's internal systems; assign development tasks & ensure that all developers establish and meet priorities and deadlines; develop the more complex software components; coordinate all phases of software testing & installation; act as a mentor & trainer. Must have a Bachelor's degree or equivalent in computer science or related field w/ 8 years in the core job duties or 8 years w/ software development w/ COBOL and/or PL/I including 5 years' experience with IBM MVS including experience w/ JCL, TSO, REXX, CLISTS, VSAM, CICS, EXTRIEVE, File-Aid; experience in designing, creating & maintaining database & VSAM layered data structures; 2 years' experience as a developer in mutual funds using basic Mutual Fund & Financial technology, accounting principles, procedures & processing. Active project experience in all phases of a systems development life cycle, including production support. Team leadership including mentoring. Experience in development & data sharing on other platforms including PCs. Demonstrated ability w/ Microsoft Project, Microsoft Access, Microsoft Word, 40 hrs/wk, 9am-5pm, \$62,577 - \$77,200/yr. Send two resumes to: Case # 71343, P.O. Box 8968, Boston, MA 02114.

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Positions available to support projects which test/design/integrate solutions to enhance Manufacturing and Finance areas. Requires a BSCS, knowledge of MRPII/related systems, AS400, structured systems development, and the ability to translate user requirements.

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In this executive role, you'll need progressive management experience in the development and maintenance of an IT Architecture for an organization of significant size and scope. A proven ability to translate broad technological needs into plans and standards which support business objectives is key to your success. Strong leadership and communication skills are essential for this executive-level role. **For this position, please respond to Dept. IT/71.**

■ ASSISTANT DIRECTOR, IT OPERATIONS & CUSTOMER SUPPORT

The professional we seek will possess extensive knowledge of mainframe, mid-range, LAN & PC computing platforms and voice/data network technologies including performance characteristics, industry trends and services required to ensure their effectiveness. Strong leadership and communication skills are essential for this executive-level role. **For this position, please respond to Dept. IT/2.**

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Software Engineer to review and analyze O&M (operation and maintenance) SFS (systems functional specifications) for a commercial digital cellular system supporting CDMA and PDC air interfaces; create SwFS for O&M features based on SFS for these systems; analyze and document O&M SIS across functional areas using SST and SCAP messaging protocols; create risk analysis documents on software development efforts; create resource estimates on software feature development; create and update software feature developer schedules identifying cross-functional area dependencies; use OOD techniques to create and document designs for O&M features based on SwFS; apply network management systems and use SNMP and ASN.1; implement high level designs in C++ using OOP techniques in large software systems; create component test design documents for verifying design implementation; perform component tests to ensure implementation is in line with SwFS; review SST and SITG design documents for O&M features associated with digital cellular systems; test O&M functionality and messaging in digital cellular systems including the use of protocol analyzers by specifically providing support to SST and SITG groups for testing O&M features against SFS requirements; participate in formal inspection/review of above O&M related documentation and source code; provide software support on O&M products to customers; participate in configuration management activities associated with all phases of software development for digital cellular systems; participate in process improvement teams, providing inputs for reducing development cycle time and enhancing performance/recovery together with potential development of DSS and data warehouse applications using INFORMIX RDBMS; provide technical leadership to software development/problem investigation teams regarding O&M of digital cellular systems. 40 hours, 8:00am to 5:00pm, \$53,000/year. Master's in Electronics Design and Technology or Electrical Engineering or Computer Science required as well as three years of experience as a Software Engineer or three years of experience as a Software Consultant and/or Systems Analyst and/or Assistant Systems Analyst and/or combination thereof. Experience must have included: system architecture and O&M software associated with commercial digital cellular systems supporting CDMA and PDC air interfaces; use of SST and SCAP messaging protocols; network management systems with use of SNMP and ASN.1; development of DSS and data warehouse applications using INFORMIX RDBMS; testing O&M functionality and messaging in digital cellular systems, including use of protocol analyzers; and use of OOD techniques and OOP in C++ for large software systems. Applicants must have proof of legal authority to work permanently in the U.S. Send 2 copies of cover letter and resume to Illinois Department of Employment Security, 401 S. Street - 7 North, Chicago, IL 60605. Attn: L. Bolos. Ref #V-IL-17895-B. No Calls. Employer paid ad.

Hardware Engineer working as a design team member developing digital IC's with layout designers and verification engineers. Will write and debug behavior models using knowledge of VLSI Design, computer architecture, and VHDL. Will design custom circuits, run SPICE simulations, oversee and review layout, verify timing, testing circuits, and estimate power with proprietary CAD tools such as SPICE on VMS/UNIX platform, using knowledge of electronic circuit design, solid-state electronics, MAGIC, and VMS. Will write scripts and/or C programs to aid design and verification using computer architecture, custom CMOS IC design and test, testing of digital circuits, and solid state semiconductor device knowledge. Will apply methods and/or algorithms to design and verify problems. Requirements are either an MSEE or MScS degree. No experience required. 40 hr. work week: 8:15 am to 5:00 pm M-F. Salary \$58,282.50 per yr. Send 2 copies of your resume to Case #117176, P.O. Box 8968, Boston, MA 02114 EOE. Applicants must be U.S. workers eligible to accept employment in the United States on a full-time basis.

Software Engineer

Develop software in C/C++ in an UNIX environment. Work with TCP/IP protocols and asynchronous I/O (tty) interfaces. Design and develop testcases and detailed testplans. Automate tests using UNIX shell scripts and interactive tools. Maintain software using configuration management procedures and version control tools. Work with models and techniques used in advanced source code/configuration management tools. Create and maintain multiversion build environment. Requires an M.S. in Computer Science or Engineering or Computer Intensive Curriculum and one year experience in job offered. 40 hour work week. \$40,200 per year. Apply at the Texas Workforce Commission, Fort Worth, Texas, or send resume to the Texas Workforce Commission, 1117 Trinity, Room 424T, Austin, Texas 78701, [0, #TX7858263. Ad Paid by An Equal Opportunity Employer.

Software Engineer sought to analyze, design, develop and implement application architecture in a client-server environment. Perform network configuration and network administration. Provide technical support to end users. Serve as technical team leader and/or project manager. Utilize: Oracle, Case tool technology and C/UNIX. Requirements: Bachelors Degree in Computer Science, Math or Engineering. Five years experience as a Software Engineer and/or five years in Software development in a client/server environment. Such experience must include: Oracle, C/UNIX, Case tool technology, and work as a team leader or project manager. Salary: \$85,000/yr. Hours: 40.wk. Must have proof of legal authority to work permanently in the U.S. Send two copies of both resume and cover letter to Illinois Department of Employment Security, 401 South State Street - 7 North, Chicago IL 60605, Attention: Sheila Lindsey. Reference #: V-IL 16751-L and employer paid ad. No calls.

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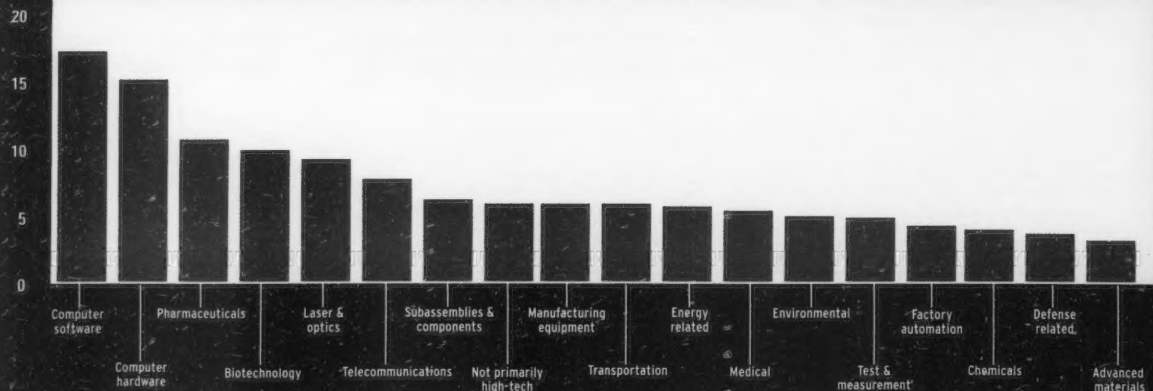
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Percent projected change in number of employees from July through September 1997



CompTech, a directory publisher in Woburn, Mass., tracks the U.S. 45,000 technology-manufacturing firms. This survey relates to the 31,042 tracked firms with fewer than 1,000 employees.

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Marketplace

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RelTec Focuses on Two New Services

Relational Technologies, Inc. (RelTec™), a Midwest software consulting company, recently announced the addition of two service practice groups, the Internet Information Systems Practice and the DBAssist(tm) practice. "This allows us to target two growing areas of our industry in which the demand for talent greatly outweighs the supply," comments Wayne Somers, RelTec's Vice President of Marketing.

The Internet Information Systems Practice focuses on traditional Web-bound solutions, but with a kicker: a database backbone that combines traditional relational database technology benefits with the now familiar connectivity of the Web. "We've already wit-

nessed how small businesses profit from the visibility of the global online market," remarks Practice Manager Brian Shensky. "But simple home pages aren't enough — taking the next step to manage information exchanged online can make these businesses even more visible, productive and profitable. I want RelTec to help these small businesses realize their growth potential."

The DBAssist Practice is based on the concept of remote database support and preventative maintenance. This service targets companies who can't afford, don't need, or don't want a full-time data-

base administrator (DBA), and those who need additional support or expertise. "DBAssist offers companies a mechanism to ensure the smooth operation of their databases and to reduce the costs associated with managing the same. This fully customizable service is designed to meet the specific needs of each client, allowing companies to supplement existing staff to prepare itself to handle all database situations, planned or unplanned," says Michele Pompilius, Practice Manager for DBAssist.

Mike McIntyre, President of RelTec sees the addi-

tions to their business as an indicator of trends within the industry. "As the computer product and service offerings become more diverse globally, small to midsize consulting companies need to do two things to survive: specialize, and partner with others. These two practices attack the first issue and begin to embrace the second."

In addition to the above services, Relational Technologies provides custom database solutions, product installations and upgrades, database migrations, hardware recommendations, capacity planning, education, and general consulting. Relational Technologies can be contacted at <http://www.reltec.com> or 88.88.RELTec (888-873-5832).



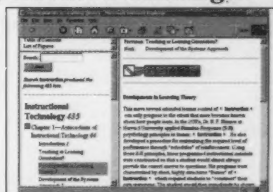
Best of breed document management and electronic publishing solution by HYNET Technologies

HYNET Technologies, a developer of document management solutions for corporations and universities, has announced the company's debut with the Digital Library System (DLS). HYNET Technologies' DLS incorporates the best elements of document management and electronic publishing to create an open solution for the Internet, intranet, and CD-ROM. The product offers security, full-text search of content and user annotations and dynamic information structures and supports open standards such as SQL, SGML and XGML. Due to HYNET Technology's understanding of the Internet, it is the first to offer a unique pricing options for

the HYNET DLS that allows unlimited titles, web access and CD-ROM distribution.

HYNET's DLS consists of patent-pending technology and has been adopted by major organizations such as Novellus Systems, and the University of Southern California. HYNET DLS incorporates the best characteristics of electronic publishing, including retrieval of information at the paragraph level, full-text search of user annotations and multiple views of queried information, with the best attributes of document management solutions, including document storage and security. HYNET's solution is flexible, user-friendly, and — unlike other full-

featured document management or electronic publishing solutions — HYNET offers an open, flexible and secure solution that allows users to edit information at any point in the process. HYNET is the first to offer the revolutionary Binder architecture, which allows users to "shuffle" document content and structure after the document has been published. HYNET's solution allows for the creation of views and editions of documents without re-indexing or duplicating document information. Other options include a gateway to SQL databases, support for English and 4 Asian languages and additional training, services and



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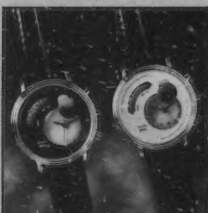
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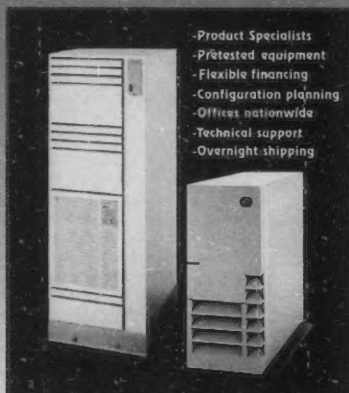
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A Web page may have 3D effects or slick graphics, but without the ability to collect input from the viewer into a database, or dynamically display information from a database, the page is simply electronic art. RelTec can marry the latest Web technology with proven relational database applications to provide much more than just a pretty face.

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Most companies are unaware that their systems have been used until they receive complaints from recipients, or from ISPs that have been mail-bombed with the spam.

Computerworld's legal department is in the process of collecting information about transgressions by these spam mailers. Companies that may have had their e-mail servers utilized in this manner are invited to work with us to put an end to this practice. To that end, we are collecting as much information as possible to help provide evidence for potential legal action.

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The information may be forwarded via e-mail to **spammed@computerworld.com**, or faxed to **(508) 270-1111**. Please provide a return e-mail address for future correspondence. We will be building an e-mail list that will be used solely for the purposes of sharing this information with all affected parties. No information will be utilized for editorial purposes without the prior consent of the respondent.

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Super Prize Sweepstakes - Winners will be selected in random drawings from all eligible entries received. Early Bird winner will be selected in a separate drawing from among all eligible entries. Sweepstakes begins 8/29/97. Drawings will be conducted on or about 4/30/98 by Ventura Associates, Inc., an independent judging organization whose decisions are final. Drawing will be held at 1040 Avenue of the Americas, New York, NY 10018. You need not be present to win.

CONSUMER DISCLOSURE Different creative presentations of the sweepstakes may present different prize choices. Values at a given prize level will be approximately the same. All prize winners will have the option of selecting any prize offered at level won. However, estimated maximum retail value and odds of winning each prize are as follows: 1 Grand Prize - \$25,000 for cash alternative or \$25,000; 1 First Prize - \$2,000; 1 Second Prize - \$1,000; 50 Third Prizes - \$80; 1,000 Fourth Prizes - \$85 each; 1 Early Bird Prize - \$5,000. Total prize value: \$102,000.00. Certain creative presentations of the Super Prize Sweepstakes may present an Early Bird Prize. To qualify for the Early Bird Prize, if the Early Bird Prize is presented in your office, your entry must be received by the Early Bird date specified elsewhere in this offer. Odds of winning any prize are determined by the total number of eligible entries received. Distribution of sweepstakes will not exceed 300 million. All Super Prize Sweepstakes prizes will be awarded.

Automobile, boat/trailer prizes must be picked up at local dealer. All other merchandise prizes will be shipped to winner. Boat/trailer and/or automobile title, tags, license and registration fees are winner's responsibility as are any other incidental expenses not specified in the offer. No prizes subject to availability and must be completed within 12 months of date awarded. Actual values of prizes depend on location of winners and times of departure. Certain restrictions and blackout dates may apply. If a trip prize is won by a minor, minor must be accompanied by a parent or legal guardian. Winner's traveling companion will be required to sign a release of liability prior to departure. Trip prizes are on a space available basis and do not include personal purchases or incidentals. No substitution of prizes, except sponsor reserves the right to substitute a prize of equal or greater value in the event an advertised prize is unavailable.

For winners list (available after 8/29/97) send self-addressed, stamped envelope by 1/15/98 to: Super Prize Winners, P.O. Box 9193, Medford, NJ 07643-9193.

THE FOLLOWING APPLIES TO THE SWEEPSTAKES ABOVE - No purchase, payment or contribution necessary to enter or win. No photocopied or mechanically reproduced entries will be accepted. Not responsible for technical malfunctions, failure of computer, telephone equipment or software, inaccurate transmission of entry information or for lost, late, misdirected, damaged, incomplete, illegible or postage-due mail. All entries become the property of sponsor and will not be returned.

Winner notification will be by mail. A winner may be required to sign and return an Affidavit of Eligibility/Liability/Potential Release within 14 days of date printed on notification or he/she will be disqualified. Any prize/prize notification returned or undeliverable will result in disqualification. If a major prize is won by a minor, it will be awarded to parent or legal guardian and the Affidavit of Eligibility and Release must be signed by the parent or legal guardian. Except where prohibited by law, winners consent to the use of their names, home addresses, likeness and photographs for advertising and publicity without additional compensation.

Sweepstakes is open to legal residents of the U.S., Canada and Europe (in those areas where made available) who have received the offer. In the event that the designated recipient of the offer has moved, the offer may not be valid in the state, country or province to which the offer has been forwarded. Void in Puerto Rico and where prohibited by law. All federal, state, provincial and local laws and regulations apply.

All prize values are in U.S. currency. No transfer of prize permitted. A winner is responsible for all taxes on his/her prize.

Canadian residents, in order to win, must first correctly answer a time-limited quiz having question administered by mail. Any litigation regarding the conduct and awarding of a prize in this publicity contest by a resident of the province of Quebec may be submitted to the Régie des arbitrés, des conciliations et des recours de son jury.

Sweepstakes may be presented in different creative presentations by different organizations. Ventura Associates, Inc., 1040 Avenue of the Americas, New York, NY 10018, the independent judging organization has provided all prizes at no charge. Ventura Associates, Inc., reserves the right to withdraw the promotion if it becomes technically corrupt.

Employees of Sweepstakes Administrator, presenting organizations, their advertising agencies and promotional companies involved in this promotion and their families, agents, successors and assignees are ineligible to participate in the promotion and shall not be eligible for any prizes covered herein. The parties hereto acknowledge that SCA is not liable for any prize awards payable to premature participants in violation of this form.

COMPUTERWORLD TECHNOLOGY WEEKLY SWEEPSTAKES OFFICIAL RULES: No purchase necessary. Complete official entry form or print off entry information on photo pages, including this week's prize and fax to: (800) 808-2708. Incomplete entries not eligible. Sweepstakes begins 12:01 am (EST) Monday (the date of the issue). All entries must arrive by fax no later than 11:59 am Monday of the following week. The issue date can be found at the top of most pages of this magazine. Sponsor not responsible for telephone or fax equipment failures or delayed transmission. All entries become sponsor's property & will not be returned.

Winner will be determined in a random drawing on or about 5:00 pm (EST) the Monday following the issue date. You need not be present to win. The prize (and its retail value) awarded with the entry form is guaranteed to be awarded & delivered to winner within 30 days from drawing date. If notification letter or prize is returned as undeliverable, it will be awarded to an alternate winner at random. No prize substitutions except due to unavailability, in which case a prize of equal value will be awarded. Prizes not transferable or redeemable for cash. All taxes on prizes are winner's responsibility. Acceptance of prize constitutes permission (except where prohibited) to use winner's name, likeness & likeness for promotional purposes without additional compensation.

Sweepstakes is open to legal US residents, 18 & older. Odds of winning determined by total number of entries received. Est. distribution: 150,448. Sponsor: Computerworld, Inc., 500 Old Connecticut Path, Framingham, MA 01701. Employees of Computerworld, Inc., its affiliates, subsidiaries, retailers, advertising & promotion agencies & immediate families of each not eligible. All federal, state & local laws & regulations apply. Void in Puerto Rico & where prohibited by law.

For winners list (available within 4 weeks of the drawing), send a SASE to: Sweepstakes Winner, Computerworld Technology Sweepstakes, 500 Old Connecticut Path, Framingham, MA 01701.

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The Week's Stocks

Gainers



Losers



PERCENT

Computerworld Corp.	75.8	Western Digital Corp.	-10.7
Fluor Corp.	42.9	Zilog Inc.	-10.5
BGS Systems Inc.	39.6	Optical Data Systems Inc.	-14.3
BGS Systems Inc.	26.8	SCO Inc.	-13.7
Secure Computing Corp.	22.3	FTP Software Inc.	-9.7
MTI Technology Corp.	22.2	Ascend Communications (L)	-9.2
Al Home Corp.	21.2	Northern Corp.	-9.1
Wang Laboratories Inc.	18.1	Radius Inc.	-8.7

DOLLAR

BGS Systems Inc.	7.50	Western Digital Corp.	-9.06
Fluor Corp.	6.75	Zilog Inc.	-3.81
BGS Systems Inc.	6.63	Optical Data Systems Inc.	-3.69
Secure Computing Corp.	6.31	Ascend Communications (L)	-3.38
MTI Technology Corp.	6.25	Kilix	-2.69
Al Home Corp.	5.25	Quantum Corp.	-2.69
Wang Laboratories Inc.	5.19	Gateway 2000 Inc.	-2.25
		Stratix Computer Inc.	-2.25

INDUSTRY ALMANAC

Clock ticks for Verity

Analysts say Verity, Inc. (Nasdaq:VRTY) in Sunnyvale, Calif., is running out of time to turn itself around. Improved financial results aren't seen in the next quarter, analysts say, the company's future is questionable.

Verity two weeks ago announced a net loss of \$9.8 million for its first fiscal quarter ended Aug. 31. This follows a previous fiscal year with a \$17.9 million total net loss. The software company provides search, retrieval and information-filtering products for the Internet and corporate intranets.

Revenue for Verity's first quarter was \$5.3 million, with a loss of \$9.8 million. Revenue for the same period last year was \$8.8 million, with a loss of \$1.3 million.

David Beck, an analyst at TD Securities, Inc. in Toronto, has a Hold rating on Verity stock. "The company has good, well-recognized products, but it is in a major transition period right now," he says. Verity's new CEO, Gary J. Sbona, is expected to institute significant cost cuts and some product reorganization in the next few months, according to Beck. And results from those measures should show up in Verity's next quarterly report. "It's a now-or-never type of thing."

Sbona is also CEO of Regent Pacific Management Corp., a turnaround management firm in Cupertino, Calif. Verity retained the services of Regent Pacific Management on July 31 after the departure of several senior managers.

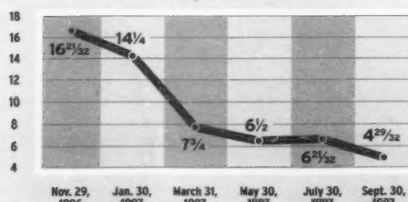
"I don't have an argument against Verity's technology," says Michael Murphy, editor of the "California Technology Stock Letter" in Half Moon Bay, Calif. "My problem is with the uncertainty of the company's business model and its ability to maintain a product lead."

Murphy says Verity is "burning" through at least \$6 million per quarter. And at that rate, the company will run out of money by about May 1998, he says.

— Nancy Dillon

VERITY DICEY

Some analysts say a Verity turnaround in the next quarter will be crucial



52 WEEK RANGE	Oct 3 2PM	Wk Net	Wk Pct	CHANGE	Oct 3 2PM	Wk Net	Wk Pct	CHANGE
Communications and Network Services UP 2.02%								
COMS	81.38 24.00	3COM Corp.	51.50	0.75	1.5	SSAX	17.63	3.88
AT	71.75 52.00	AMERITECH Corp.	49.63	1.58	7.0	SYSP	34.63	7.38
ASND	80.25 10.00	Ascend Communications (L)	33.19	-3.38	-9.2	TRUV	5.25	1.50
BTNY	6.51 10.75	AT&T	41.44	-2.00	-4.4	VIEW	24.00	8.38
BAY	39.75 15.38	BAYVIEW SYSTEMS INC.	39.75	2.38	6.4	VMRK	10.88	5.50
BEL	82.50 16.75	BELL ATLANTIC CORP.	82.50	3.56	4.3	WALK	18.25	10.00
BLS	49.00 16.25	BELL SOUTH CORP.	49.00	2.31	5.0	WALL	29.13	12.25
BKRT	42.25 9.25	BROOKHOUT TECHNOLOGY	16.50	0.25	1.5	WANG	24.06	16.00
CL	46.50 27.50	CableLabs Systems	32.31	-4.19	-6.6	Internet UP 5.17%		
CGM	15.50 8.63	CENTIGRAM COMMUNICATIONS	31.31	-3.31	-5.6	AMZN	32.75	15.75
CSC	83.25 45.25	Cisco Systems Inc.	78.50	5.19	7.1	ATHM	26.06	16.63
CNMT	7.00 3.31	COMPUTER NETWORK TECH.	3.31	-4.31	-5.6	CSRV	14.56	8.63
DICI	32.75 12.63	DSC COMMUNICATIONS	30.00	2.25	8.1	EDPY	20.50	8.88
FORE	41.50 10.00	FORE SYSTEMS INC.	18.88	-0.19	-1.0	XCIT	35.00	5.50
GDC	12.38 5.38	GENERAL DYNAMIC HOLD.	6.38	0.31	5.2	SEK	11.50	4.38
GTE	53.00 18.13	GENERAL SIGNAL NETWORKS	40.16	0.81	1.9	LCOS	42.00	9.50
GTE	49.38 38.25	GTE CORP.	48.06	1.94	4.2	NETC	19.13	7.88
LU	90.75 42.13	LUCENT TECH.	86.64	3.31	7.8	NSCP	63.00	23.00
MADP	16.13 4.50	MAJESTIC NETWORKS NY	5.56	0.19	3.5	CMAT	25.50	6.50
MCIC	41.38 23.88	MCI COMMUNICATIONS CORP.	36.31	6.63	22.3	PSIX	14.50	5.50
NEMT	9.50 2.50	NETMACHINES INC.	7.75	-0.25	-3.3	QDKR	7.25	2.00
NTEK	8.13 1.44	NETVUE CORP.	1.88	-0.19	-9.1	RAPT	25.75	8.88
NDI	16.25 6.00	NETWORK COMPUTING DEVICES	10.69	0.19	1.8	SCUR	13.50	4.75
NWR	24.00 11.25	NETWORK EQUIPMENT TECH.	17.44	-0.25	-1.4	SPVG	19.50	6.00
NETC	20.25 11.13	NETWORK CHEMICALS	20.13	1.56	8.4	THOD	58.00	11.25
NN	63.75 26.50	NEUBRIDGE NETWORKS CORP.	63.38	2.31	3.8	Semiconductors OFF 1.47%		
NT	108.31 56.63	NORTHERN TELECOM LTD.	108.31	5.00	4.8	AMO	48.50	14.13
NOVL	11.00 6.25	NOVELL INC.	8.78	0.09	-1.1	ADI	36.25	18.75
ODSI	19.25 9.75	OPTICAL DATA SYSTEMS INC.	11.25	-1.88	-14.3	CHPS	26.50	7.88
PCTL	37.88 8.25	PICTURETECH CORP.	10.94	0.13	1.2	CRUS	24.25	8.00
PTON	4.25 1.31	PROTEON INC.	1.94	1.07	19.1	CY	18.84	10.00
RACO	6.38 1.50	RACORE INC.	2.00	0.00	0.0	CYBE	34.00	14.88
RETX	5.25 3.38	RETI	6.31	-0.13	-1.9	INTC	102.00	41.31
SBC	62.44 47.00	SBC COMMUNICATIONS	62.44	3.50	5.9	LSCC	74.50	27.50
SFA	24.94 13.25	SCIENTIFIC ATLANTA INC.	21.31	-1.38	-6.1	LCOS	42.00	9.50
SHVA	60.00 8.25	SHIVA CORP.	62.63	-1.06	-7.8	MCRL	44.88	9.13
SIN	53.75 25.50	SINERGY CORP.	53.75	2.50	4.8	MU	60.00	24.88
SMSC	18.13 8.25	STANDARD MICROSYSTEMS CORP. (H)	16.75	-1.88	-12.6	MTI	90.50	44.13
USW	39.44 29.25	U.S. WEST INC.	39.44	1.31	3.4	NSM	42.19	17.63
XNRC	11.13 7.50	XEROX CORP.	10.38	-0.81	-6.2	TEN	142.00	47.00
XYLN	59.38 12.38	XYLON CORP.	22.06	0.56	2.6	VISI	18.88	14.88
PCs and Workstations OFF 1.03%								
APPL	29.56 12.75	APPLE COMPUTER INC.	22.80	0.72	3.4	XLNX	58.50	30.88
CPQ	79.56 20.50	COMPAQ COMPUTER CORP.	75.50	1.44	1.9	ZLIG	29.50	17.00
DELL	101.25 18.75	DELL COMPUTER CORP.	100.50	2.00	2.1	Peripherals and Subsystems UP 1.49%		
GLT	62.25 19.38	GATEWAY 2000 INC.	31.31	-2.25	-6.7	ADPT	51.38	28.63
HWP	72.94 42.50	HEWLETT-PACKARD CORP.	69.63	1.81	2.5	APCC	31.50	14.13
MUEI	23.38 12.63	MICRO INTERNATIONAL INC.	17.13	-1.13	-6.2	CREAF	28.00	5.38
NINPY	74.00 53.50	NEC AMERICA	61.00	-1.13	-4.2	DATA	24.50	24.50
SCCL	30.31 12.63	SILICON COMPASS	27.38	2.88	10.5	DTRM	12.50	6.75
SUNW	53.31 25.50	SUN MICROSYSTEMS INC.	46.81	-1.88	-3.9	EMC	62.75	21.63
Software UP 4.19%								
DCN	37.84 12.88	DATA GENERAL CORP.	26.81	0.13	0.5	EMUL	77.25	14.13
IBM	109.44 61.63	IBM CORP.	105.31	2.69	2.6	ESCC	33.50	20.00
MDCX	8.75 2.88	MEAD DATA INC.	5.38	0.13	2.4	EBXT	17.50	9.50
PECM	10.13 9.00	PERICOM TECHNOLOGY INC.	10.13	0.19	1.9	INTL	2.63	1.06
SQNT	13.25 12.25	SEQUENT COMPUTER SYS.	25.56	0.81	3.2	IPM	29.13	14.13
TEAM	5.88 2.00	TEAM SOFTWARE INC.	61.00	-1.13	-3.6	IPSL	28.31	0.94
SEA	60.75 18.00	SEAGRAM COMPUTER INC.	46.25	-0.25	-0.6	ISAG	36.75	15.31
UIS	15.75 3.75	UNISYS CORP. (H)	15.00	2.19	17.1	MTSI	34.88	16.63
Software UP 3.50%								
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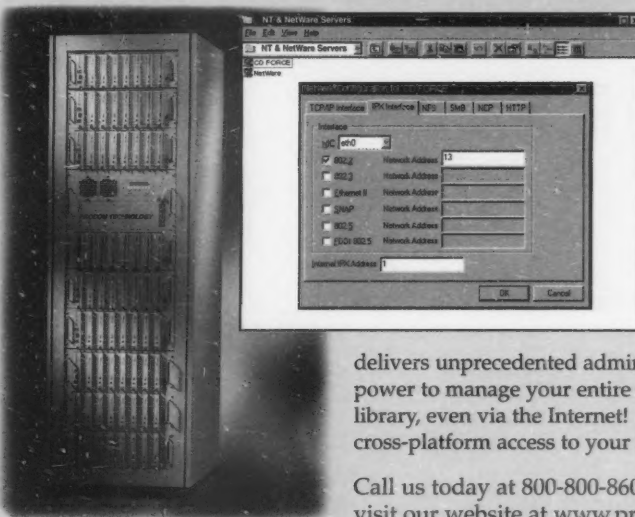


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PRODUCT REVIEW

Path to NT 5.0 starts with a few bumps

By Chris DeVoney

MICROSOFT CORP. started its Windows NT 5.0 Workstation and Server operating systems on the long path from Beta 1 to final release 10 days ago when it handed copies to more than 6,000 programmers at its Pro-

The beta has enough features for corporate programmers to begin testing, and it puts Microsoft's Active Directory into the hands of information systems for the first time.

fessional Developers Conference in San Diego. As with most first betas, the path is a tad rocky to start.

The workstation beta sports extended device support, better management, enhanced security and Internet Explorer 4.0. For the server, the beta introduces

Active Directory, improved storage management, better communications security and an applications installer.

But Beta 1 is missing significant features, including complete Plug and Play support and a complete set of migration tools. The first release is aimed primarily at commercial developers, who Microsoft hopes will ready their wares for NT 5.0.

The beta has enough features for corporate programmers to begin testing, and it puts Microsoft's Active Directory into the hands of information systems for the first time.

The workstation beta supports the basic Plug and Play structure but trips over some non-Plug and Play legacy cards. PC Card support also is limited,

and many multifunction cards that combine functions — networking and modems, for example — have only their modern side recognized.

UPDATED DRIVERS

The server beta includes an updated driver set — NDIS 5 — and extensions for Asynchronous Transfer Mode (ATM), including the ability to support ATM's quality-of-service guarantees. It also supports I20 — the Intelligent I/O architecture for high-speed devices — and Fibre Channel for high-speed networking.

And NT 5.0 hosts Universal Serial Bus and Digital Versatile Disk devices along with the DirectX 5.0 application programming interface for multimedia.

It also supports the Advanced Configuration and Power Interface standard for a power-saving standby mode.

NT 5.0 adopts the Internet Ex-

plorer 4.0 interface with its subsidiary programs such as Outlook Express. But because the Friday, Sept. 26 release of Beta 1 didn't coincide with the production release of Internet Explorer 4.0 the following Tuesday, Microsoft ludicrously includes a mid-September prerelease version of Internet Explorer 4.0. That means you must acquire and install the final Internet Explorer 4.0 code separately.

NT 5.0 can coexist with Windows 95 on systems with large disk partitions, but we haven't tested the upgrade process from Windows 95.

SNAP-IN APPROACH

Microsoft replaced older NT administration tools with the Microsoft Management Console and a snap-in tool approach for better administration of machines and the network. The Distributed File System easily unites various server resources — even from different ma-

chines — into one hierarchical directory for easier searches and use.

IS finally gets per-user disk quotas, and users get individually keyed file system encryption. But a disk defragmenter that handles File Allocation Tables (FAT), FAT32 and New Technology File System partitions won't ship until Beta 2. Kerberos security provides a one-stop method for authenticating users.

While this first beta exposes enough interior plumbing and external features to see the positive direction in NT 5.0, the beta understandably lacks the robustness, migration tools and "reduced cost of ownership" tools to recommend the final product.

If NT 5.0's development follows the schedule of its predecessors, a second beta release in January will be a good time for a further review. □

DeVoney is a reviewer in Seattle. He can be reached at chris@cybercritic.com.

& Networking skills are hot; NT skills are scorching. IT Careers, page 102

Windows 3.1 users keep the faith

CONTINUED FROM COVER

quirements such as 32-bit processor architecture and additional RAM — analysts said NT requires 32M bytes of RAM to run properly, whereas Windows 95 can function with 16M bytes of RAM — and because Windows NT's installation isn't automated. Gartner also said the cost differential between installation requirements and training were factors.

In a similar vein are estimates from Giga Information Group in San Jose, which place the cost of NT migration at 20% to 50% more than Windows 95 migrations.

Actual costs range dramatically, explained Giga analyst Rob Enderle. He pegged the average Windows 3.x upgrade to Windows 95 at \$200 per desktop for license and installation — not including hardware upgrades and training.

The gap in costs may explain why a new study from Dataquest, which polled several companies on a variety of operating-system-related topics, found

that more than half of those with more than 1,000 users have no Windows NT Workstations installed. A quarter of those same companies run 100% Windows 3.x environments.

What those numbers mean, Le Tocq said, is that vast numbers of 3.x users remain in corporations, and those users won't be potential sales targets for new office suites or 32-bit applications.

Dataquest will release its study this week at the Gartner Group Symposium in Lake Buena Vista, Fla.

MOST STAY PUT

With few motivations for the average user to move to 32-bit applications, most users aren't, analysts said.

At Coopers & Lybrand LLP in New York, a Windows 3.1 shop with about 70,000 users, most users will end up with a Windows 95 desktop as the company migrates upward. Windows NT Workstation is reserved

for high-end users.

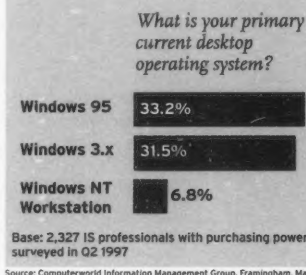
Coopers & Lybrand Director Brian Brumit said the company saw no need for users who run off-the-shelf office productivity suites such as Notes to have NT Workstation desktops.

Brumit scoffed at the idea that one-size desktop fits all: He said that notion "goes back to the old scenario that all users are created equal. That makes no sense. I personally believe that ultimately there will be diversity of appliances to match the type of users and applications."

Installed base numbers from Dataquest also show how wide the lead is between Windows 95 and Windows 3.1. Forecast numbers indicate that by the end of 1997, Windows 95 will barely overtake Windows 3.1, with 131.6 million licenses, while Windows 3.1 users will still

number 130.5 million. Windows NT Workstation will have an installed base of about 7.8 million.

The situation is similar at Dunlop Tire Co. in Amherst, N.Y., which has about 1,300 users — 80% of whom run Windows 3.1 desktops.



Hugh Allan, director of information technology at Dunlop, said the company has only about five workstations that run Windows NT Workstation, and most of those are used by developers and research and development people.

Allan said Dunlop, like many other companies, was told that Microsoft is making NT its cor-

porate direction but that Dunlop isn't buying the idea just yet. He cited installation costs and application headaches.

"We're completely refusing to accept that at this point," he said.

Microsoft product manager Stacey Breyfogle acknowledged that although her company would like corporate users to move to NT, no one operating system at this point fits all users' needs.

Breyfogle said Microsoft expects the number of users to grow dramatically as hardware vendors begin preloading NT Workstation on corporate desktops, however.

"From a corporate perspective, NT is our direction, because of reliability, security and manageability and because the migration from NT 4.0 to NT 5.0 will be easier than from [Windows 95 or 98] to NT 5.0," Breyfogle said. □

& Corel and Lotus aim at Windows 3.1 users, who want to be left alone. Page 61

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COMMENTARY

Things they don't teach you in Management 101

Bill Laberis

The IT labor market today is characterized by too many jobs competing for too few candidates, a supply/demand imbalance that will continue for the foreseeable future. The focus has turned from recruiting strategies to ways to retain your best people.

Correspondingly, there's been a flood of how-to articles with tips for keeping your best people. Some of this information is actually good.

I managed large numbers of high-octane professionals in a pressure-cooker for 13 years — successfully, too, if low turnover is an indication.

I think much of what is considered common IT management sense ignores some less conventional advice for hanging on to your best people. Herein is some unconventional, but no less time-tested, advice:

■ **Work around HR as often as possible.** Get your people to come to you, not the human resources department. HR workers tend to be intrusive. They absolutely thrive on bureaucracy, they develop writ-

ten procedures in characteristically convoluted language, and 90% of what HR does can be handled by a well-constructed intranet.

Just about all the issues that employees take to HR are far better handled in your own department.

Set up a nonthreatening open-door policy wherein a worker can discuss issues and problems with no fear of suffering prejudice as a result.

■ **Make peer reviews a part of performance reviews, including your own.** Workers are traditionally evaluated by

the bosses. But who knows better how an employee is working day-to-day than his peers? And while you're at it, make darn sure the employee evaluation process includes employees' evaluation of you.

Yes, you.

Collect the results, which should be anonymous, then promise all employees or direct reports that you'll deliver a summary on the results.

Even better, select someone from the staff to collect, tabulate and report on the results so you and the staff see the summary at the same time. That's called putting your arse on the line. It's also called leadership and courage. Then fix the things in your management

style that need fixing.

■ **Stop pushing training.** I'm dead serious. Professional trainers and HR types assume everyone needs and wants training. This is one of the greatest falsehoods perpetrated on unsuspecting man-

agers. Some people, perhaps many, get all the training they need while at work. It used to be called "on-the-job training."

Other people — good workers, too — get to a certain point in their professional development and are very happy to stay right there, producing for you day after day. I would guess that 90% of what's taught in training classes is lost or forgotten within two weeks; most of the rest within a month.

■ **Lighten up!** Your workers spend as much as or more time with you during the week as they do with their spouses and friends. Surprise them with things that show you care. During one very busy time at work, current *Computerworld* Editor Paul Gillin and I showed up at 7:30 a.m. and commenced cooking made-to-order omelets on the premises for the staff, serving them individually.

An omelet had a far more positive effect than any HR policy I've ever seen. Of course, we had to break eggs ... □

Laberis was editor in chief at Computerworld from 1986 to 1996. He is president of Bill Laberis Associates, a consulting and publishing company in Holliston, Mass. His Internet address is bill@laberis.com.



What does 'productivity' mean?

David Moschella

Like El Nino, the debate over how to measure computer productivity periodically sweeps over the IT industry landscape. And like what's occurring in the Pacific Ocean today, the debate has been particularly stormy this time around.

Technology enthusiasts boldly proclaim a pending high-growth economy, but some of the nation's leading economists scoff at such notions. Even more skeptical, Paul Strassmann has argued in the pages of *Computerworld* that computers have yet to make companies more productive.

If you're confused, it's not your fault. All sides are talking past one another.

On the surface, the issue seems unarguably simple. If computers don't spur productivity, companies that don't use computers should do as well as or better than those that do. Consequently, all we need to do is compare the performance of noncomputerized banks, airlines, retailers, etc. to that of their digitally-intensed competitors.

There's only one catch: The former no

longer exist. Thus, the evidence seems overwhelming: Productivity is a minor issue; computers are a matter of survival.

Businesspeople instinctively know this. They analyze IT return on investment (ROI) to resolve particular situations, not to justify the overall impact of IT.

The effective use of technology is both a competitive requirement and one of the few sources of sustainable advantage. But trying to measure IT's overall ROI is like trying to measure the value of telephones or electricity. Why bother?

By contrast, professional economists

try to focus on the growth of the overall economy. To an economist, growth is very simple. It can result only from more workers or more output per worker. The output per worker is what economists mean by "productivity."

The following example demonstrates the narrowness of this term. Imagine two competing companies, each with 10 workers. Suppose a new technology enables both companies to make their

products twice as capable without any increase in cost.

Economists would say there was no improvement in productivity, since the same 10 people are building the same type of product for the same cost. But from a business perspective, failure by either firm to adopt

this technology would equal competitive suicide.

That semantic gap has existed for years. Efforts by pundits, journalists and other technology enthusiasts to inject the power of computers into the national economic debate has breathed new life

into the issue. The pundits' premise is that the wonders of cyberspace will allow the economy to grow much more rapidly than the current average of 2% per year. It would be great if they were right.

For technologists to be taken seriously in the forecasting business, they must adopt the rules of the game. That means using the economic definition of productivity. But if they do so, the mainstream economists will carry the argument.

Although technology will continue to do amazing things, there's no reason to think that its relationship to economic growth is about to change dramatically.

But before you despair, don't forget that the economist's definition of productivity doesn't match yours or mine. Businesses that don't effectively use computers won't survive, let alone thrive. Common sense still says that building a thriving company implies being productive. That economists define it otherwise is fine for their macro purposes. Just don't let their arguments slow down your IT investments. □

Moschella is an author, independent consultant and weekly columnist for Computerworld. His Internet address is david_moschella@cw.com.



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Nortel solidifies #1 ATM enterprise switch position with 38.6% market share.
— Vertical Systems Group, 1997

Nortel grows to #1 in frame relay enterprise switch market capturing 19.8% of the market.
— Vertical Systems Group, 1997

Nortel captures #1 position in the FRAD (frame relay access device) market.
— Dataquest, 1997

Nortel rises to #3 in the worldwide frame relay equipment market.
— Vertical Systems Group, 1997

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— Dataquest, 1997

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The Back Page

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Dispatches & images from the fringes of the electronic frontier

HIGH-TECH SCANNER FOR LOW-TECH CUSTOMERS

Sales representatives still waste a lot of time keying in customer orders. So Nashville Dental, a dental-supply distributor, installed specialized scanners in the offices of its

best customers so they can feed handwritten forms into the order-entry system. The one-button scanners from

OBOS, Inc. in Wilmington, Del.,

transmit the image to a handprint-recognition

workstation that converts it to an electronic order.

Digital archives



20 YEARS AGO

(OCTOBER 1977)

- Industry leaders complain of a shortage of computer programmers.
- IBM and Burroughs have sharply rising profits.

- Headline: Programmer productivity lagging, report says

10 YEARS AGO

(OCTOBER 1987)

- The "Black Monday" stock market crash is blamed on computerized "program trading."
- Microsoft announces the Excel spreadsheet for Windows, releases Word 4.0 for PC, and ships Windows 2.0.
- Compaq introduces the 20-MHz Deskpro 386 PC.

Digital snafus

A beautician in Thailand was amazed as a cash machine dispensed more than \$20,000 in local currency because of a software error, Reuters reported last month. After returning the cash, the man's reward was a set of crockery with the banks logo.

E-mail etiquette update

Gentle Readers — You already know not to SHOUT in E-mail. But what exactly is the proper salutation and closing? "Dear Madam or Sir" and "Yours sincerely" seem too formal and "Yo!" not formal enough. In a recent column, etiquette arbiter "Miss Manners" (a.k.a. Judith Martin) suggests that E-mail falls somewhere between the extremes, with a formality level akin to a postcard. That means starting with the recipient's name followed by a dash and ending with a dash plus the sender's name. But Miss Manners says she will keep the question open if anyone wants to suggest a reasonable alternative.

— Mitch Betts



"Miss Manners"

Inside Lines

Better late than never

IBM will finally join its Unix server rivals in the 64-bit club this week. Sources said the computer giant plans to expand its RS/6000 line with a 12-processor system, code-named Raven, that comes with a 64-bit microprocessor and operating system. The 64-bit chip is the same one used in a new batch of AS/400 machines IBM rolled out last month. IBM declined to comment.

Geeks will be geeks

It wasn't enough that Microsoft launched its Internet Explorer 4.0 browser in San Francisco, the backyard of browser rival Netscape. Some of those wild and crazy Microserfs took the rivalry one step further: They trucked a BMW-size, 3-D, sky blue "e" logo (for Explorer) from the christening party to Netscape's front lawn (see story, photo, page 12). They even left a greeting card with a picture of a baby crying. "It's just not fair." A Netscape spokeswoman belittled the incident as "childish and unprofessional." Tsk, tsk.

Mirror, mirror

Paul Gross, a product manager at Microsoft, slammed Java at the Software Developers East show last week in Washington. Noting that Java doesn't run on Windows 3.1 because it needs a 32-bit environment, Gross said, "There are millions of users who are being left out." He should look in the mirror. Visual Basic 5.0, Microsoft's most popular tool, builds applications only for 32-bit platforms.

Tom would be so proud

Novell is expected to announce on Oct. 20 the next version of its GroupWise messaging and collaboration system. The new version is expected to include technology called the Jefferson Project, used to publish documents to a Web server.

The beat goes on

The financial bleeding continues at Informix Software, but product development carries on. Users who build applications on the database maker's new Universal Server said Informix is finally getting the software in shape for production uses — enough that its developers can turn some of their attention toward helping third-party vendors with plug-in products. Sources said Informix also is beta-testing an upgrade of its flagship OnLine Dynamic Server database that will include features meant to make it easier for Oracle shops to switch to the Informix software.

Steal this book

The latest tome on the year 2000 problem (Year 2000 Problem: Strategies and Solutions from the Fortune 100) was a hot item at last week's Society for Information Management annual conference in Boston. A copy of the 450-page book, on display in the conference foyer, was stolen from its perch, presumably by a millennium desperado.

Here today, gone tomorrow?

Taking a shot at Microsoft's "Where do you want to go today?" campaign, an IBM software product background contains the following phrase: "It's not where you want to go today, it's where you want to be tomorrow."

Bottoms-up approach

Overheard at the Seybold Conference in a crowd of analysts upon hearing that Bill Gates had committed to delivering Windows NT 5.0 in the second half of 1998: "I'll have to hear it from someone a little lower on the food chain to believe it."

To prove the ability of its multicasting software to push data over any kind of network, Probita, Inc. in Boulder, Colo. will transfer files over barbed wire during demonstrations this week at Networld/Interop '97 in Atlanta. You don't have to go to such extremes to get our attention. Just phone your tips and gossip to news editor Patricia Keefe at (508) 820-8183 or E-mail her at patricia_keefe@cw.com.



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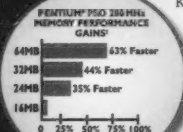


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